Guerrilla Medicine

Apocalypse Doctors and Street Medics

A Review of Resources and Protocols

PNWFOG

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The Healer's Oath

I swear by Apollo the Healer, by Asclepius, by Hygieia, by Panacea, and by all the gods and goddesses, making them my witnesses, that I will carry out, according to my ability and judgment, this oath and this indenture.

First, I will do no harm.

I will respect those physicians in whose steps I walk, and freely share such knowledge as is mine with those who are to follow.

I will apply, for the benefit of the sick, all measures that are required, avoiding overtreatment and therapeutic nihilism.

I will remember that there is art to medicine as well as science, and that warmth, sympathy, and understanding may outweigh the surgeon's knife or the chemist's drug.

I will not be ashamed to say "I know not," nor will I fail to call in my colleagues when the skills of another are needed for a patient's recovery.

I will respect the privacy of my patients, for their problems are not disclosed to me that the world may know.

I will remember that I treat a sick human being, whose illness may affect the person's family and economic stability. My responsibility includes these related problems, if I am to care adequately for the sick.

I will prevent disease whenever I can, for prevention is preferable to cure.

I will remember that I remain a member of society, with special obligations to all my fellow human beings, those sound of mind and body as well as the infirm.

Guerrilla Medicine refers to providing medical care in unconventional, resource-limited, high-risk, or austere environments—often outside formal healthcare systems. This overlaps with Street Medics (who support protesters and activists during demonstrations, riots, or direct actions) and Apocalypse Doctors (hypothetical or preparedness focused medics preparing for societal collapse, disasters, or end-of-world scenarios where conventional medicine breaks down). These concepts share roots in autonomous, decentralized, and often politically motivated healthcare, emphasizing self-reliance, improvisation, and care for marginalized or oppressed groups when standard systems fail or are hostile.

Guerrilla Medicine - Historically, guerrilla medicine emerged during conflicts like the Vietnam War and the Cuban Revolution, and has evolved into modern applications such as Tactical Combat Casualty Care (TCCC) and Prolonged Field Care (PFC). Today, organizations like Guerrilla Medicine Europe (GME) implement these principles in war zones—such as Ukraine—through mobile medical units, field-based dialysis (CrushEVAC project), and rapid administration of treatments like tranexamic acid (FAST project).

Key principles of guerrilla medicine include:

- Adaptability and improvisation: Using non-standard tools and repurposed materials to treat injuries under extreme conditions.
- Focus on essentials: Prioritizing triage and critical care, such as applying tourniquets, managing hemorrhage, and initiating prolonged casualty care.
- Community engagement: Training local populations and non-medical personnel to extend medical reach and build resilience.
- Public health approach: Addressing sanitation, disease prevention, and outbreak control alongside individual treatment.

Dr. Warner D. "Rocky" Farr was a retired U.S. Army Colonel and distinguished physician who passed away on 20 November 2024, at the age of 76. Dr. Farr was a leading proponent of guerrilla medicine, a field he significantly advanced through research, authorship, and leadership in operational environments. His most influential work, The Death of the Golden Hour and the Return of the Future Guerrilla Hospital, is a well-researched monograph that examines medical care provided by indigenous personnel under austere conditions with limited evacuation—especially relevant in irregular warfare environments, and is recommended reading for anyone interested in medicine in low-resource, austere, and non-permissive environments.

The Paradocx (https://www.theparadocx.com/) is a collaboration of US Special Operations medics advising and training in Tactical Medicine and Irregular Warfare medical capabilities. Our mission is to optimize team and individual responses in high-risk situations with limited resources, bridge underground medical networks and decentralized supply chains to effectively address global public health challenges. Based in Washington State, they offer multi-day consultation and training programs worldwide that are customized to meet your specific needs.

Prolonged Field Care Working Group (https://prolongedfieldcare.org/) provides medical support to irregular warfare. Medical support to irregular warfare refers to the organization and delivery of health care in environments where conflict is non-conventional, fragmented, and often conducted by resistance movements, insurgents, or civilian populations living under repression rather than by formal state militaries. It is the practice of keeping fighters and civilians alive, functional, and resilient when there is no reliable state health system and when access to formal medical care is denied, criminalized, or weaponized by an oppressive regime.

Guerrilla medicine is about resilience, survival, and legitimacy in environments where oppression has made normal healthcare impossible.

Apocalypse Doctors / Post-Collapse Medicine - This is more speculative and preparedness-oriented—doctors, medics, or laypeople preparing for scenarios like societal breakdown, pandemics, natural disasters, or "zombie apocalypse"-style events (often used metaphorically for total infrastructure failure).

- Focuses on austere medicine: treating gunshot wounds, infections, childbirth, chronic conditions without hospitals, labs, or pharmacies.
- Guides and resources emphasize improvisation (using household items), stockpiling antibiotics/antiseptics, surgical skills in low-resource settings, and preventive care.
- Topics include prolonged field care, trauma management (e.g., Stop the Bleed), infectious disease control, and psychological first aid in survival groups.
- Some overlap with military/prolonged field care (e.g., guerrilla warfare medicine in resistance or unconventional conflicts, where medics operate behind lines with limited evacuation).
- Real-world parallels appear in disaster relief, remote/wilderness medicine, or conflict zones (e.g., modern resistance movements where surgeons provide care clandestinely).

Street Medics: Protest, Riot, and Action Medicine - Street medics form volunteer networks providing first aid and support at protests, uprisings, and direct actions. They treat injuries from police tactics (e.g., pepper spray, rubber bullets, tear gas, blunt trauma) and help de-escalate medical crises in chaotic settings.

- Origins trace to the 1960s U.S. civil rights movement (e.g., Medical Committee for Human Rights) and anti-war protests, evolving through global justice movements, Occupy, Black Lives Matter, and Standing Rock.
- Training typically involves 20–28-hour courses (or "bridge" versions for licensed professionals like EMTs, nurses, or doctors) covering

patient assessment, wound care, chemical exposure response, heat/cold injuries, and scene safety.

- Key principles: Do no harm, confidentiality, horizontal organizing (non-hierarchical), and avoiding prescription or diagnosis beyond basic stabilization.
- Collectives exist in many cities (e.g., Chicago Action Medical, Atlanta Resistance Medics, Boston Area Liberation Medic (BALM) Squad, Seattle Street Medic Collective, Rosehip Medic Collective, Do No Harm Coalition, and Black Cross Health Collective).
- In volatile protests, they operate where official EMS can't or won't enter due to crowd dynamics or restrictions. They carry kits with saline for eye washes, bandages, gloves, and trauma supplies.
- Street medics are "guerrilla" in operating amid conflict, often wearing red crosses or similar identifiers for visibility and protection under international norms. (Grok, 2026)

In his Mini-Manual of the Urban Guerrilla, Carlos Marighella wrote...

"In the area of "makeshift" medicine, the urban guerrilla has the special role of being a doctor or understanding medicine, nursing, pharmacology, drugs, basic surgery and emergency first aid.

The problem of the wounded in urban guerrilla warfare merits special attention. During guerrilla operations in the urban area, it may happen that some comrade is wounded by the police. When a guerrilla in the firing group has a knowledge of first aid, he can do something for the wounded comrade on the spot. Under no circumstances should the wounded guerrilla be abandoned at the site of the battle or left in the enemy's hands. One of the precautions we must take is to set up first aid courses for men and women, courses in which guerrillas can learn the rudiments of emergency medicine. The urban guerrilla who is a doctor, nurse, med student, pharmacist or who simply has had first aid training is a necessity in modern guerrilla struggle. A small manual of first aid for urban guerrillas, printed on mimeographed sheets, can also be produced by anyone who has enough knowledge.

In planning and carrying out an armed action, the urban guerrilla cannot forget the organization of medical support. This must be accomplished by means of a mobile or motorized clinic. You can also set up a mobile first aid station. Another solution is to utilize the skills of a medical comrade, who waits with his bag of equipment in a designated house to which the wounded are brought. The ideal would be to have our own well-equipped clinic, but this is very expensive unless we expropriate all of our materials.

When all else fails, it is often necessary to resort to legal clinics, using armed force if necessary to force a doctor to treat our wounded. In the eventuality that we fall back upon blood banks to purchase blood or plasma, we must not use legal addresses and certainly no addresses where the wounded can really be found, since they are under our care and protection. Nor should we supply the addresses of those involved in the guerrilla organization to the hospitals and health care clinics where we may take them. Such caution is indispensable to covering our tracks. The houses in which the wounded stay cannot be known to anyone but the small group of comrades responsible for their care and transport. Sheets, bloody clothing, medicine and any other indications of treatment of comrades wounded in combat must be completely eliminated from any place they visit to receive treatment."

US Army Field Manual (FM) 31-21, Guerrilla Warfare and Special Forces Operations, dated 29 September 1961 has the following to say about medical services in an unconventional warfare environment...

Medical Service

a. **Area Command Medical Requirements**. The area command medical requirements vary widely between operational areas but usually differ from the conventional medical problem in two respects. First, due to the nature of guerrilla operations, battle casualties are normally lower in guerrilla units than in their infantry counterparts. Second, the incidence of disease and sickness is often higher in guerrilla forces than in comparable conventional units.

b. **Area Medical Support System**. The area medical support system is based primarily upon local facilities supplemented by sponsor-provided medical supplies.

c. **Medical System in the Operational Area**. The medical system in the operational area features both organized guerrilla medical units and auxiliary medical facilities for individuals and small groups. The former are located in guerrilla base areas and staffed by guerrilla medical detachments. The auxiliary facility is a location in which one or a small number of patients are held in a convalescent status.

d. **Guerrilla Medical Detachment**.

(1) Regardless of the varying size of guerrilla units, the medical detachments retain essentially the same structure and functions. Their duties are to maintain a high state of health in the command, to render efficient treatment and evacuation of casualties, and to insure the earliest possible return to duty of those who are sick or injured. The detachment may also provide treatment and drugs to auxiliary and underground elements.

(2) The organization of the medical detachment consists essentially of three sections—the aid station, which is charged with the immediate care and evacuation of casualties; the hospital, which performs defensive treatments of casualties and coordinates medical resupply and training; and lastly, the convalescent section, which cares for patients who require rest and a minimum of active medical attention before their return to duty. The convalescent section is not located near the hospital area as this increases the size of the installation and thus the security risk. Instead, the patients are placed in homes of local sympathizers or in isolated convalescent camps.

(3) During the early stages of development, the medical organization is small and probably combines the aid station and the hospital into one

installation. The use of auxiliary convalescent facilities is found at all stages of development.

e. **Evacuation**.

(1) Every effort is made to evacuate wounded personnel from the scene of action. The condition of wounded guerrillas may preclude movement with the unit to the base. In this event, the wounded are hidden in a covered location and the local auxiliary unit notified the local auxiliaries then care for and hide the wounded until they can be returned to their own organizations.

(2) The evacuation of dead from the scene of action is most important for security reasons. The identification of the dead by the enemy may jeopardize the safety of their families as well as that of their units. The bodies of those killed in action are evacuated, cached until they can be recovered for proper burial, or disposed of by whatever means is consistent with the customs of the local population.

(3) As the operational area develops and the overall situation favors the sponsor, evacuation of the sick and wounded to friendly areas may be feasible. This lightens the burden upon the meager facilities available to the area command and provides a higher standard of medical care for the patient.

f. **Expansion of Medical Support**.

(1) As the arms, command expands, ft is more efficient from a medical standpoint to establish a centralized system to provide advanced medical care. Field hospitals permit more flexibility because of them wider selection of trained personnel, equipment to provide special treatment, and they relieve the aid stations oaf the responsibility for prolonged treatment of patients. Since this type of installation may be fairly large and may have sizeable amounts of equipment, its mobility will suffer. For that reason, it is located in a relatively isolated area away from troop units, headquarters

and other sensitive areas but so as to receive the maximum protection from guerrilla units.

(2) To prevent the hospital from becoming so large that it attracts undue attention, certain actions are taken. First, as trained personnel, supplies and equipment become available, additional hospitals are established. Second, as soon as possible, a patient is transferred to a convalescent home to complete his recovery, If the individual is placed in a civilian home, he is properly documented.

(3) In some cases, the local population may not be able to support the area command with qualified medical personnel. As the requirement for doctors and specialized personnel increases, the SFOB may have to provide additional medical personnel over and above the detachment's organic medical personnel.

It is worth noting that the 1961 version of FM 31-21 was an update of Organization and Conduct of Guerilla Warfare, FM 31-21, dated October 1951. The section on medical service did not change significantly from the 1951 to the 1961 version of the field manual.

Medicine at the End of the World

At the end of the world there are no modern hospitals, pharmacies are few and the chemist has but meager drugs available to treat your illness. Without access to antibiotics, bacterial infections make even a simple cut or an abscessed tooth potentially life-threatening. Lack of vaccines mean that infectious diseases, such as measles, mumps, diphtheria, and tetanus would again spread through communities. Tuberculosis (TB), HIV/AIDS, and malaria become common. While dengue, schistosomiasis, leishmaniasis, and lymphatic filariasis are also highly prevalent. Poor sanitation and lack of access to clean drinking water leads to the spread of cholera and typhoid fever. Limited healthful foods result in malnutrition and diseases like scurvy and beriberi. If you are

injured, a serious laceration, a broken bone, a burn, there is no ambulance to come get you and even if there was, there is no hospital to take you to for treatment.

Trained physicians and nurses are not available. Sure, there are still doctors and nurses somewhere in the world, but they are not near you. You've heard that there is a clinic, a field hospital, operating in the next district – but that is days away and maybe it's just a rumor. Even if the clinic existed and you could get there, would you be seen, is there a cost for treatment, do they even have the ability to treat you?

Does all of this sound like dystopian fiction, some kind of "prepper" fantasy? Sadly, in many parts of the world these conditions are all too real. Remote and isolated communities have no access to medical care, or at best are living in a very limited-resource and austere environment.

Even if you currently live in a modern and functioning city, with access to healthcare just minutes away, there are those who warn that a failure of critical infrastructure could send us back to the dark ages. In October 2017, the Task Force on National and Homeland Security, Secure the Grid Coalition, and other partners published A Call to Action for America that began with a predicted 30-day scenario following the failure of the national power grid, a scenario that could lead to the death of 90% of the American population. (That scenario is included in an appendix to this manual.) Is such a scenario likely? Perhaps not, but there are serious organizations that warn that it is at least a possibility.

In 2021, the World Health Organization published A Guidance Document for Medical Teams Responding to Health Emergencies in Armed Conflicts and Other Insecure Environments (commonly called the 'Red Book') in which they stated: "Conflict and war have a catastrophic effect on the health and well-being of nations and have evolved considerably over recent decades. As a result, a significant rise in humanitarian crises, including urban violence, means more people are

affected for longer periods with disruption in the delivery of basic services a dire reality. Health interventions and innovative approaches in responding to the challenges of humanitarian crises have the potential to save lives and lessen the impact of conflicts on civilians." But they also warned that: "Medical teams working in armed conflict and other insecure environments frequently face serious threats to their security and safety. Such challenges need to be overcome in order to access patients, with teams sometimes having to deal with limited acceptance by the communities in which they work and parties to the conflict."

You may not live in a war or conflict zone today, but there are those who do. The Russian invasion of Ukraine has resulted in the verified deaths of at least 13,883 civilians, including 726 children, with over 35,500 injured, as of August 2025 according to the United Nations Human Rights Monitoring Mission.

As of 6 January 2026, over 72,437 Palestinians have been reported killed in the Gaza war according to the Gaza Health Ministry (GHM), with the majority of casualties resulting from Israeli military actions including airstrikes, siege, and ground operations. It is estimated that 80% of Palestinians killed are civilians, and a study by the United Nations Office of the High Commissioner for Human Rights (OHCHR) found that 70% of those killed in residential buildings were women and children. A peer-reviewed analysis in The Lancet estimated 64,260 trauma-related deaths by June 2024, suggesting the official count may underrepresent the true toll by up to 41%, not accounting for deaths from disease, malnutrition, or lack of medical care. Israel has destroyed or severely damaged every hospital in Gaza during its military operations since October 7, 2023. On April 13, 2025, an Israeli airstrike on the Al Ahli Arab Hospital in Gaza City, destroyed the last fully functional hospital in the city, thereby denying any sort of real medical care to the sick and injured in Gaza.

In countries with long-term conflict, such as Somalia, access to healthcare remains severely limited, particularly in rural and conflict-

affected areas. In 2026, less than 30% of the Somali population had access to healthcare services. But it does not take a state of war for people to lack access to medical care. A March 2025 article, From Past to Present: Tracing Africa's Path to Universal Health Coverage, published in the National Library of Medicine (PMID: 40124416), reported that 'access to medical care in African countries remains a significant challenge, with less than half (48%) of the population able to access essential healthcare services.'

From 2016-2018, Dr. Amani Ballour ran an underground hospital in Ghouta, Syria. This facility, known as "The Cave," was established after all above-ground hospitals were destroyed by military attacks. Dr. Ballour and her team treated thousands of wounded civilians and children under extreme conditions, facing shortages of medicine and constant danger from airstrikes and chemical weapons. The hospital's existence exemplifies guerrilla medicine as a desperate yet effective response to war and armed conflict.

On October 3, 2015, the United States attacked an MSF (Médecins Sans Frontières) hospital in Kunduz, Afghanistan. The attack was carried out by a U.S. Air Force AC-130U gunship, resulting in the deaths of 42 people, including patients, medical staff, and caretakers. The hospital, a fully functioning trauma center, was struck during a prolonged airstrike lasting over 30 minutes. The U.S. military initially claimed the attack was in response to Taliban activity but later admitted it was a "tragic but avoidable accident" caused by human error, equipment failures, and poor communication. The Pentagon claimed that the gunship crew did not know the target was a hospital, despite its coordinates being on a no-strike list. MSF condemned the attack as a deliberate breach of international humanitarian law, calling it a potential war crime. A new MSF trauma center reopened in Kunduz in 2021 to continue providing emergency care to the region.

But you don't have to live in a war zone or wait for a total collapse of the national power grid to face a lack of access to medical care. An April

2025 paper Improving Health and Health Care in Rural Communities: A Position Paper from the American College of Physicians (PMID: 40163886) reported that over 90% of rural counties in the United States face a shortage of primary care physicians, and 65% of rural counties lack a practicing psychiatrist.

Remote communities in Alaska and northern Canada (especially in Nunavut and the Northwest Territories) face extreme challenges in accessing medical care due to vast distances, harsh weather, and limited infrastructure. Many villages are only accessible by air or boat, with no roads connecting them, making emergency and routine care difficult and costly.

Even in large cities, 73% of homeless individuals report at least one unmet healthcare need, including medical, mental health, dental, or prescription care, due to systemic barriers. Key factors reported in this lack of access to medical care included lack of health insurance (60% of homeless individuals are uninsured), inability to afford medications, lack of transportation, long wait times, and stigma or discrimination from healthcare providers.

In 2024, veterans (military retirees) reported that they were being denied access to Joint Base Lewis-McChord (JBLM) in Washington State and thus were denied access to medical care at the Madigan Army Medical Center (MAMC), the on-base hospital. It appears that this denial of access to medical care at MAMC was in retaliation for these veterans having reported serious misconduct by senior personnel in the JBLM Directorate of Emergency Services (DES) / JBLM Police Department.

A 2025 report highlighted that soldiers in mental health crisis were repeatedly denied access to medical care and crisis counseling at JBLM. The report links this failure to a "corrupt and abusive police force (JBLM DES)" and an "uncaring and incompetent Commander" who allegedly

retaliated against those who spoke out about abuse and corruption in the JBLM DES.

Tragic Outcomes: The report cites two recent, high-profile incidents:

- In June 2024, JBLM soldier John "Robbie" Maupin murdered two people in Lacey, WA, after being denied mental health support at Madigan Army Medical Center.
- In June 2025, former JBLM soldier Travis Decker murdered his three young daughters following a complete mental breakdown, reportedly after being denied care and access to suicide prevention resources at JBLM.

These cases are part of a larger pattern of concern. Whistleblowers at Madigan Army Medical Center have alleged that commanders routinely ignore medical advice, treating soldiers with PTSD and TBI as "troublemakers" rather than individuals in need of care, leading to punitive discharges instead of medical separations; while denying military retirees access to medical care and other on-post veterans benefits earned through their military service.

Federal law, 10 USC Section 1074 & 1076 states that dependent family members and military retirees must be granted access to military installations to receive any medical care to which they are entitled, yet that access was still being denied at JBLM when this guide was published in 2026.

Even with a major medical center located in your community, a hospital in which you are entitled to receive medical care and treatment, you can still be denied access to that care when corrupt government officials are willing to ignore the law and retaliate against whistleblowers, homeless veterans and minority populations in the community.

Regardless of the circumstances, be it a failure of critical infrastructure, living in a war zone, lack of medical facilities in rural and remote communities, or denial of access to medical care by corrupt

government officials; if you can't see a physician when you are sick or injured you will have to seek alternative sources of healthcare, provide your own care, or suffer with pain and illness and hope that your condition improves on its own as opposed to becoming worse.

Mini-Medical School

There are several resources that can help you build the knowledge and skills needed to provide medical care in an austere or non-permissive environment. The best option would be to complete medical school, nursing school, or training as a critical care paramedic and focus on providing care in unconventional, resource-limited, high-risk, or austere environments. Military medics with advanced training, such as the US Army's 18D Special Forces Medical Sergeant and the US Navy's Independent Duty Corpsman likely have the knowledge and skills necessary to provide medical support in an unconventional environment – to practice guerrilla medicine.

Regardless of one's foundational medical skills, guerrilla medicine requires knowledge and skills that are often outside of the conventional, formal healthcare system. Reading books focused on unconventional medicine is essential for every guerrilla medic, as is having an in-depth conventional knowledge of anatomy & physiology, biology, and therapeutics. Where There Is No Doctor and other books published by Hesperian Health Guides (https://hesperian.org/) are essential references for any healthcare provider working in a remote and austere environment. The Village Medical Manual 7th Edition: A Guide to Health Care in Developing Countries - by Mary Vanderkooi (Combined Volumes 1 and 2) is a similar reference. Survival and Austere Medicine 3rd Edition - by The Remote, Austere, Wilderness and Third World Medicine Discussion Board Moderators available as a free PDF from several online sources should be part of every medic's library. Auerbach's Wilderness Medicine, 7th Edition,

by Paul S. Auerbach MD, Tracy A Cushing MD, and N. Stuart Harris MD is the standard reference for decisively managing medical emergencies encountered in any wilderness or austere setting. Improvised Medicine: Providing Care in Extreme Environments, 2nd Edition, by Kenneth V. Iserson and The Survival Medicine Handbook: The Essential Guide for When Help is NOT on the Way, 4th Edition, by Joseph Alton MD and Amy Alton APRN are also very useful references. Combat Casualty Care, Combat Medic Specialist Fieldcraft, and Medical Aspects of Harsh Environments (Volume 1 and 2) available as free PDFs from the Borden Institute are also recommended references for the guerrilla medic.

The Ship's Medicine Chest and Medical Aid at Sea (2003) published by the US Public Health Service, Medical Handbook for Seafarers (2007) – published by the Finnish Institute of Occupational Health, with Heikki Saarni and Leena Niemi, and The Ship Captain's Medical Guide (SCMG) (2024), published on of behalf of the UK Maritime and Coastguard Agency are intended primarily for use on vessels where there is no medical professional, such as a doctor, on board, but are useful in any remote or isolated environment. (Each of these publications were at one time freely available online, but due to intellectual property included in the latest (2024) edition, the SCMG is no longer freely available from www.gov.uk, although previous editions my still be found online.)

Online courses are excellent for foundational and preparatory education, as well as continuing education for medical personnel wanting to maintain and enhance their knowledge; however, a complete medical education requires hands-on clinical training, patient interaction, lab work, and practical exams—elements that cannot be replicated virtually.

The following free and low-cost online courses and databases are recommended to anyone wanting to build their knowledge of guerrilla medicine and develop skills for working in austere environments.

Advanced Disaster Medical Response (ADMR) Course (https://www.facs.org/quality-programs/trauma/education/advanced-disaster-medical-response/) is an innovative, online course designed for all multidisciplinary disaster responders, whether domestic or international, and regardless of the cause of the disaster. The course was developed in cooperation with the Massachusetts General Hospital, Department of Surgery, International Trauma and Disaster Institute (ITDI). Twenty-eight subject medical experts with extensive experience in disaster response contributed to the content of the course. The modules focus on the Principles of Disaster Medical Response and include:

- Mass Casualty Incident Management
- Incident Command System
- Disaster Medical Triage
- Evacuation
- Blast Injuries
- Crush Injuries
- Psychological Response to Disaster

Borden Institute (https://medcoe.army.mil/borden) established in 1987, collaborates with medical professionals within the Department of Defense to publish military medical scholarship. The Institute's publications support the professional development and education of military healthcare professionals and serve as a critical reference in both combat and peacetime settings. Most publications are available in print and as eBooks (epub and/or MOBI formats). All publications are available in PDF format, as free downloads.

Centers for Disease Control and Prevention (CDC TRAIN) (https://www.train.org/cdctrain/welcome) is a gateway into the TRAIN Learning Network, the most comprehensive catalog of public health trainings shared by public health organizations across the USA.

CDC Yellow Book (https://www.cdc.gov/yellow-book/site.html) has been a trusted resource among healthcare professionals for over half a century. It compiles the U.S. government's current travel health guidance, providing healthcare professionals and international travelers with expert guidance for safe and healthy international travel. Along with disease-specific prevention and treatment recommendations, this comprehensive reference text equips readers with the background and context needed to understand and address public health threats associated with all types of international travel.

Cholera Outbreak Response - Field Manual (https://www.choleraoutbreak.org/) The response to a cholera outbreak must focus on limiting mortality and reducing spread of the disease. It should be comprehensive and multisectoral including: epidemiology, case management, water, sanitation and hygiene (WaSH), logistics, community engagement and risk communication. All efforts must be well coordinated to ensure a rapid and effective response across sectors. This document provides a framework to detect and monitor cholera outbreaks and to organize the response. It includes a short section linking outbreak response to both preparedness and long-term prevention activities.

Defense Health Agency Virtual Medical Library (DHA VML) (https://dha.libguides.com/home) provides access to high-quality, evidence-based medical, nursing, and allied health information resources for Military Health System personnel. The VML ensures that all personnel have access to core, essential resources regardless of duty station.

Deployed Medicine (https://www.deployedmedicine.com/) is a platform used by the United States Defense Health Agency to trial new innovative learning models aimed at improving readiness and performance of deployed military medical personnel. The intent is to deliver personalized, dynamic learning using the most current and accessible technology, enabling a self-directed and continuous study of medical best practices and lessons learned.

Global Anesthesia & Critical Care Learning Resource Center (https://www.stanesglobal.com/courses) Born out of necessity to support ongoing academic partnerships focused on medical education and training for Anesthesiology and Critical Care Medicine, the Global Anesthesia and Critical Care Learning Resource Center ("the LRC") began in May of 2020 in response to travel restrictions limiting in-person exchange programs. The LRC was created by faculty with in the Division of Global Health Equity within the Department of Anesthesiology, Perioperative and Pain medicine at Stanford University.

Global First Aid Reference Centre (an IFRC reference center) (https://www.globalfirstaidcentre.org/) believes that in order to make communities safer and resilient, first aid needs to be recognized as an integral part of a wider developmental approach. The platform offers a range of learning materials, tools and guidance to support your National Society and their first aid training programs.

Global Health Learning Center (GHLC) (https://globalhealthlearning.org/) has provided state-of-the-art global health information online, worldwide. Access is easy and free. The primary audience for the Global Health Learning Center is health sector staff, but any individual with the desire or need to learn is welcome to take any courses.

International Federation of Red Cross and Red Crescent Societies (IFRC) (https://www.ifrc.org/), is a global humanitarian network helping millions during disasters and health emergencies. The IFRC offers a wealth of learning opportunities and resources to their National Societies, volunteers, partners and the general public.

MedlinePlus (https://medlineplus.gov/) is an online health information resource for patients and their families and friends. It is a service of the National Library of Medicine (NLM), the world's largest medical library, which is part of the National Institutes of Health (NIH).

Military Clinical Readiness Curriculum (https://www.facs.org/for-medical-professionals/education/programs/military-clinical-readiness-curriculum/) is designed for a general surgeon deployed to a relatively far forward battlefield base who must be capable of providing initial trauma resuscitation and life- and limb-saving surgical procedures for those injured in combat. It is also relevant to all deployed surgeons no matter their location as well as all trauma/general surgeons caring for the injured no matter their location. The curriculum can be utilized to correct an identified knowledge deficit or for just-in-time learning. The curriculum is broken down into seven domains of knowledge, including:

- Airway and Breathing
- Critical Care and Prevention
- Expeditionary Unique
- Head and Spine Injury
- Torso Trauma
- Transfusion and Resuscitation
- Wounds, Amputations, and Fractures

NextGenU (https://nextgenu.org/) is the world's first free, health science learning platform. They provide free, high-quality medical, nursing, and public health education to students, professionals, and institutions worldwide.

Open Manual of Surgery in Resource-Limited Settings (https://www.vumc.org/global-surgical-atlas/) is a series of articles based on the real-world experiences of physicians living and working in resource-limited settings like Sub-Saharan Africa, where they face difficult situations every day, having to make decisions and perform surgery without advanced tools, sometimes well outside their comfort zone.

Parasites Without Borders (https://parasiteswithoutborders.com/) A comprehensive, advanced and free educational resource on all aspects of parasitic diseases and their impact on humanity around the globe.

PubMed Central (https://pmc.ncbi.nlm.nih.gov/) is the free, open access branch of PubMed. It includes full-text versions for all indexed papers.

Regional Public Health Training Centers collectively represent the nation's most comprehensive resource for public health workforce development. They help sustain a skilled public health workforce by providing access to world-class professional development, experiential learning, and consulting and technical assistance.

- Region 1: New England PHTC (https://sites.bu.edu/nephtc/)
- Region 2: Region 2 PHTC (https://region2phtc.org/)
- Region 3: Mid-Atlantic Regional Public Health Training Center (https://lms.marphtc.pitt.edu/)
- Region 4: Region IV PHTC (https://r4phtc.org/)
- Region 5: Region V PHTC (https://www.rvphtc.org/)
- Region 6: South Central PHTC (https://r6scphtc.tulane.edu/)
- Region 7: Midwestern PHTC (https://mphtc.org/)
- Region 8: Rocky Mountain PHTC (https://www.rmphtc.org/)
- Region 9: Western Region PHTC (https://wrphtc.arizona.edu/)
- Region 10: Northwest PHTC (https://www.nwcphp.org/)

SURGhub (https://www.surghub.org/) the United Nations Global Surgery Learning Hub, is an online platform designed to enhance surgical training and education. It offers free, high-quality surgical training from leading institutions, making it accessible anytime and anywhere.

Tactical Medicine (https://tccc.org.ua/en) was developed by a consortium of organizations, namely the All-Ukrainian Resuscitation Council, the NGO "Reformation," and the American-Ukrainian Medical Foundation, in coordination with the Defense Health Agency's Joint Trauma System (JTS) and the Committee on Tactical Combat Casualty Care (CoTCCC).

University of the People (https://www.uopeople.edu/) is a tuition-free, non-profit, online university based in Pasadena, California. It offers

associate, bachelor's, and master's degrees in Health Science with a fully asynchronous, self-paced learning model.

University of Utah Associate in Wilderness Medicine (https://www.awls.online/associate-in-wilderness-medicine) is a self-paced online certification program that does not have a fixed number of hours. It consists of completing four online courses -- One of the following courses: AWLS - Advanced Wilderness Life Support or WFR - Wilderness First Responder or BWLS - Basic Wilderness Life Support - AND all three of these additional courses: Backpacking Medicine, SAR - Search and Rescue, Wilderness Travel and Tropical Medicine.

WHO Academy (https://www.who.int/about/who-academy/) is the World Health Organization's lifelong learning center, bringing the very latest innovations in adult learning to global health.

Whole Blood Field Transfusion Course (https://thor.podia.com/thor-whole-blood-transfusion-course) presents a current evidence-based field transfusion course.

Massive Open Online Courses (MOOC)

There are many other online courses available to anyone wanting to learn more about health care and medicine. In addition to the groups and organizations listed above, **Coursera** (https://www.coursera.org/) is a global online learning platform that offers access to a wide range of online courses, professional certificates, and accredited degrees from leading universities and companies. The University of Colorado offers an **Emergency Medical Technician (EMT) Specialization** and a **Wilderness First Aid Specialization** online via Coursera.

A similar platform is edX (https://www.edx.org/) a nonprofit online learning platform founded in 2012 by Harvard University and the Massachusetts Institute of Technology (MIT). edX offers a wide range of MOOCs. MIT Open Course Ware (MIT OCW) (https://ocw.mit.edu/) is an initiative of the Massachusetts Institute of Technology (MIT) to publish all

of the educational materials from its undergraduate- and graduate-level courses online, freely and openly available to anyone, anywhere.

Future Learn (https://www.futurelearn.com/) located in London offers a large number of courses from UK colleges and universities. Search these MOOC platforms for course in health and medicine.

Most MOOC courses free to audit, but there may be a fee to obtain course certificates.

First Aid and Basic Emergency Care Training

At a minimum first aid and emergency care training should include:

- CPR / AED and Basic Life Support
- Standard First Aid for Adults
- First Aid for Babies and Children
- Temperature Related Stress and Illnesses
- First Aid for Burns
- Emergency Trauma Response / TECC / Stop the Bleed
- Combat Lifesaver Course (US Army)
- Wilderness First Aid / Wilderness First Responder
- Seizure Recognition and First Aid Certification
- Stroke Recognition
- Naloxone Overdose Training
- Psychological First Aid

Each of the above courses is available online, allowing students to build a foundational knowledge in first aid and basic emergency care, but hands-on training and practice with a competent instructor is essential to develop the skills needed to use that foundational knowledge to care for patients and treat injuries and illnesses in the field.

Individual First Aid Kits (IFAK)

The U.S. Army Individual First Aid Kit II (IFAK II) is a standardized, compact medical kit designed for immediate battlefield care, containing essential items to address life-threatening injuries. The kit was fielded starting in 2014 and continues to be issued to U.S. Army personnel.

Key components include:

- Two non-pneumatic, one-handed tourniquets for controlling severe extremity hemorrhage.
- One chest seal dressing (twin pack) to treat sucking chest wounds and prevent pneumothorax.
- One nasopharyngeal airway (NPA) to maintain an open airway in unconscious or injured individuals.
- One pair of sterile, reinforced combat medic tape (2 in. x 100 in.) for securing dressings and bandages.
- One 1-yard gauze bandage (sterile cotton) for wound coverage.

- Two pairs of patient examining and treatment gloves for infection control.
- One tactical combat casualty care (TCCC) card with a built-in marker to document first aid provided.
- One eye shield (surgical, aluminum, Fox-style) to protect a wounded eye from pressure during bandaging.
- One strap cutter to quickly remove restraints or straps from injured personnel.
- Two clear, re-closable bags for storing used or contaminated items.
- A pouch with a lanyard to secure the insert, allowing it to be easily removed and accessed from either side.

Naval Special Warfare SEAL Tactics - NWP 3-05.2 Appendix F - Tactical Lessons Learned (June 2007) makes the following medical recommendation for personnel in the field…

F.2 Medical

1. Take and use insect repellent. If mites or other insects become a problem, try to find appropriate repellent. Mud can be used as a last resort. Carry repellant in zip-lock bags and isolate it from other items in your rucksack. Squeeze air from the container and screw the cap on firmly.
2. Carry tweezers to remove anything that sticks. In areas with large thorns (e.g., Panama) carry needle nose pliers.
3. Devise or obtain a field litter and practice carrying wounded personnel during training. Even light personnel become very heavy when being carried in a litter. Practice carrying for at least 2 km.
4. Become knowledgeable on the how, why, and ways for MEDEVAC.
5. Ensure the personal medical kit is in a standard location and has standard contents for all platoon personnel.
6. Carry throat lozenges to stop coughing on patrol/ambush. (Be careful of odors caused by some lozenges.)

7. Use a wounded individual's medical field dressing before using your own.
8. Take care of your feet. If a platoon member starts to get foot problems while on a mission, stop in a secure position, remove boots, dry and treat the feet with powder and medicated ointment. Tape and proceed as able.
9. Narcotic painkillers, antibiotics, and anti-diuretics should be taken on patrol and carried in non-collapsible waterproof containers (key float containers available at marine stores work well).

The Centers for Disease Control and Prevention (CDC) recommends that travelers carry a supply of the following over-the-counter medications:

- Antidiarrheal medication (for example, bismuth subsalicylate, loperamide)
- Antihistamine
- Decongestant, alone or in combination with antihistamine
- Anti-motion sickness medication
- Medicine for pain or fever (such as acetaminophen, aspirin, or ibuprofen)
- Mild laxative
- Cough suppressant/expectorant
- Cough drops
- Antacid
- Antifungal and antibacterial ointments or creams
- 1% hydrocortisone cream
- Insect repellent containing DEET (30%-50%) or picaridin (up to 15%)
- Sunscreen (preferably SPF 15 or greater) that has both UVA and UVB protection
- Antibacterial hand wipes or alcohol-based hand sanitizer containing at least 60% alcohol
- Lubricating eye drops
- Mild sedative or other sleep aid

- Medicine to prevent altitude sickness
- Water purification tablets

A more detailed list can be found in the CDC Yellow Book, 2026, Travel Health Kits – (https://www.cdc.gov/yellow-book/hcp/preparing-international-travelers/travel-health-kits.html)

Your individual first aid kit should be divided into three sections: (1) a trauma kit to treat major life-threatening injuries, (2) a minor injuries kit to treat cuts, scrapes, bumps, bruises, and blisters, and (3) a medications kit to treat illnesses and complications arising from injuries, such as pain management and infection control. An individual first aid kit should also be tailored to your environment and included those items that support your own medical knowledge, skills, and training.

In some cases, you may want to carry a survival / escape and evasion (E&E) kit. The USAF Medical Module B (NSN:6545-01-534-0925) of Survival Kit Escape and Evasion (E&E) (NSN:6545-01-537-0894) includes:

- 1 glow stick
- 4 large Band-Aids
- 4 small Band-Aids
- 1 insect repellent wipe
- 1 Ceralyte electrolyte drink mix pack
- 1 SPF 30 sunscreen wipe
- 1 QuickClot combat gauze pack
- 2 bacitracin ointment packs
- 4 safety pins
- 4 antiseptic towelettes wipes
- 1 cotton compressed gauze bandage roll
- 1 camo bandage roll

Survival Kit Escape and Evasion (E&E) (NSN:6545-01-537-0894)

A two-part article Special Operations Individual Medical Equipment by Dirk Geers, available in the National Library of Medicine is recommended reading when building your medical kits

- Part I – The Major Trauma Kit (PMID: 20112648)
- Part 2 – The In-Use and Survival Medical Kits (PMID: 20306410)

Medical Aid Bag Pack List v2.5

The Medical Aid Bag Pack List v2.5 is a comprehensive guide developed by the U.S. Army's Brooke Army Medical Center (BAMC) for military medical personnel, particularly those in the Army Medical Department (AMEDD). It serves as a standardized reference for assembling and stocking medical aid bags used in tactical and combat environments, and is designed to ensure responders have critical supplies readily accessible in high-stress, time-sensitive situations.

Airway/Breathing Management

1. Airway, oropharyngeal cuffed	2 ea
2. Airway, nasopharyngeal	1 ea
3. Airway, oropharyngeal, lg	1 ea
4. Airway, oropharyngeal, med	1 ea
5. Ambu-bag, adult	1 ea
6. Asherman Device	2 ea
7. CO2 Detector, colometric, inline	1 ea
8. Endotracheal Tube, 7 Fr	1 ea
9. Endotracheal Tube, 8 Fr	1 ea
10. Bougie, intubation stylet	1 ea
11. Gauze, Vaseline	4 ea
12. Heimlich Valve	1 ea
13. Laryngoscope blade, Macintosh, #4	1 ea
14. Laryngoscope blade, Miller, #3	1 ea
15. Laryngoscope Handle, pediatric	1 ea

16. Pocket Mask	1 ea
17. Stop Cock, 3 way	2 ea
18. Syringe, 50-60cc (for suction)	1 ea
19. Thoracotomy tube, 36 fr.	2 ea
20. Tracheostomy Tube, Cuffless	1 ea
21. Tracheostomy Tube, Cuffed	2 ea
22. Tracheostomy Tube, Inducer	1 ea

Rapid Sequence Intubation Drugs

23. Atropine	1 vl
24. Etomidate	1 vl
25. Fentanyl, 0.05mg/ml	1 vl
26. Lidocaine, 1%	1 vl
27. Scopolamine	1 vl
28. Succinylcholine	1 vl
29. Valium	1 vl
30. Vecuronium	1 vl
31. Versed	1 vl

Circulation Management

32. Bandage, Dyna-Flex, Cohesive Compression 2" x 5 yd	1 ea
33. Bandage, Muslin	8 ea

34. Blade, surgical, #10	4 ea
35. Blade, surgical, #11	2 ea
36. Blade, surgical, #15	2 ea
37. Blade with handle, #10	4ea
38. Bone Gun	1 ea
39. Cardiac Needle, 16ga, 6 in	1 ea
40. Catheter, 14ga	2 ea
41. Catheter, 16ga	4 ea
42. Catheter, 18ga	6 ea
43. Central Venous Cath Kit sgl lumen	2 ea
44. Drain, Penrose, 1", sterile	3 ea
45. Dressing, Burn	2 ea
46. Dressing, Crinkle Fluff	6 ea
47. Dressing, Field 11 3/4" x 11 3/4"	2 ea
48. Dressing, Field 4" x 7"	8 ea
49. Dressing, Field 7 1/2" x 8"	2 ea
50. Hespan, 500cc	4 ea
51. Infusion Set IV 10 gtts/ml	4 ea
52. Pads, Nonadherent, 4" x 4"	5 ea
53. Syringe disposable 10cc	4 ea
54. Tape, adhesive 2”	2 ea
55. Tape, microfoam, 3"	1 ea
56. Tape, nylon 1"	2 ea

57. Tegaderm 2-3/8in x 2-3/4in 4 ea

58. Tourniquet, Kwik 1 ea

59. Tourniquet, one-handed 4 ea

60. Wrap, Ace 4” 2 ea

Disability/Exposure/Vitals Asses/Mgt

61. Oto/Ophthalmoscope set 1 ea

62. Pulse Oximeter, finger 1 ea

63. Scissors Bandage 1 pr

64. Sphygmomanometer 1 ea

65. Stethoscope 1 ea

66. Thermometer, Oral 1 ea

67. Thermometer, Rectal 1 ea

Surgery

68. Case Medical Inst & Supply Set, complete w/instruments 1 ea

69. Gauze Sponge, 2" x 2" 10 ea

70. Gauze Sponge, 4" x 4" 10 ea

71. Gloves, sterile 2 pr

72. Marcaine, 0.5%, 50ml 1 vl

73. Pads, Alcohol 10 ea

74. Provodone Iodine Swab, 3/pk 3 pk

75. Sponge w/Brush, Surgical, Betadine 1 ea

76. Steri-strips, 1/2"	2 pk
77. Suture Prolene, 3-0	2 pk
78. Suture Prolene, 4-0	2 pk
79. Suture Silk, size 0 w/o needle	2 pk
80. Suture, Silk-0 on Keith needle	2 pk
81. Suture Vicryl,	3-0 2 pk
82. Suture Vicryl, 4-0	2 pk

Emergency Medications

83. Albuterol Inhaler	1 ea
84. Benadryl, 50mg/ml, 1ml vial	2 ea
85. Diazepam, 5mg/5ml	2 vl
86. Epinephrine, 1:1000, 10ml	1 vl
87. Fentanyl lollypops, 800mcg	4 ea
88. Fentanyl 250mcg/5ml	4 ea
89. Morphine Sulfate, 15mg/ml, 30ml	1 bt
90. Narcan, 0.4mg/ml, 1ml vial	4 ea
91. Nitroglycerin tablets, 0.4mcg	1 bt
92. Zofran, 4mg/5ml	6 vl

Antibiotics/Antifungals

93. Aspirin 81mg	10 ea
94. Augmentin XR tab	20 ea

95. Azithromycin 250mg tab	40 ea
96. Doxycycline, 100mg capsules	40 ea
97. Fluconazole, 150 mg tab	12 ea
98. Metronidazole 500mg tab	40 ea
99. Rocephin, 1gm Powder	1 ea
100.Levaquin 750mg tablets	20 ea
101.Zosyn, 3.375 gm, powder	1 vl
102.Erythromycin Ophth Oint 0.5%	2 ea

General Medications

103. Afrin Nose Spray	1 ea
104. Zyrtec, 10mg tab	100 ea
105. Ambien 10mg	200 ea
106. Bags, drug dispensing	12 ea
107. Benadryl 25mg tab	25 ea
108. Imodium, 2mg capsules	24 ea
109. Celebrex, 200mg tab	100 ea
110. Mupirocin ointment, 15gm	1 tube
111. Nature's Tears	4 ea
112. Prednisone 50mg tab	40 ea
113. Psuedoguest, 60mg tab	50 ea
114. Tessalon Perles	30 ea
115. Transderm Scop 1.5 mg patch	8 ea

116. Triamcinalone cream, 15 gm	1 tb
117. Tylox, 5/500mg tab	20 ea
118. Tylenol, 500mg tab	50 ea
119. Valium, 10mg tab	20 ea
120. Zantac, 150mg tablets	50 ea
121. Zofran, 8mg tab	24 ea
122. Zyrtec, 10mg tablets	50 ea

Miscellaneous Items

123. Special Operations Forces Medical Handbook (Teton Publishing) 1 ea

124. Bandage elastic, 4" x 4.5 yds	2 ea
125. Band-Aids 3/4" x 3"	10 ea
126. Batteries, as needed	6 ea
127. Blade, tongue	5 ea
128. Easy Suction	1 ea
129. Eye patch kit	1 ea
130. Field Medical Cards	1 book
131. Gloves, exam	6 pr
132. Kendrick Traction device	1 set
133. Lip Light, for Kevlar chin strap	1 ea
134. Moleskin, 20" square	1 ea
135. Otter Box, medium, for med vials	2 ea
136. Pen Light, White	1 ea

137. Petzel Headlamp	1ea
138. Phantom Warrior, Medic Flashlight	1 ea
139. Safety Night Stick (various colors)	2 ea
140. Snake Bite Kit, Sawyer "Extractor"	1 ea
141. Splint, flexible, "Sam"	2 ea
142. Surgi-lube, 5 gm packet	4 ea
143. Swab, Benzoin Tincture	4 pk
144. 18 ga 1-1/2in needle	4 ea
145. 21 ga 1-1/4in needle	4 ea
146. 22 ga 1 in needle	4 ea
147. 27 ga 1-1/2in needle	4 ea

**Note: This list is a general packing list for a Medical Aid Bag. These suggestions should be adapted to the specific situation anticipated.

10 Essential PFC Capabilities

	1. Monitoring	2. Resuscitate	3. Ventilate and oxygenate	4. Control the Airway	5. Sedation and Analgesia	6. Physical Exam and Diagnostics	7. Nursing and Hygeine	8. Surgical Interventions	9. Telemedical Consult	10. Package and Prepare for flight
Minimum	BP Cuff, Stethescope, Pulse Ox, Foley	Fresh Whole Blood Kit	Bag-Valve-Mask with PEEP Valve	Awake Ketamine Cric	Opiate Analgesics titrated through IV	Physical Exam without advanced	clean, warm, dry, padded, catheterized	Chest tube, cric	Make comms, present patient and key vitals	Be familiar with stressors of flight
Better	Capnometry	2-3 cases of LR for Burn Resus	O2 Concentrator	Long duration sedation	Sedation with Ketamine/option of midazolam	Ultrasound and point of care labs	Elevate head of real beddebride, washout NG/OG	Fasciotomy debridement, amputation	Add labs and ultrasound video	Trained in critical care transport
Best	Vital Signs Monitor	PRBS, FFP, Type specific donors	Portable Ventilator	Proficient in Rapid Sequence Intubation	Educated and practiced imulti drug sedation	Experienced and trained in above	Experienced in all nursing care concerns	Trained and experienced in above	Real time video conference	Experienced in critical care transport
Ruck	Pulse Ox, Head Lamp	1 FWB Kit per man, 2 250cc bag NS	BVM with PEEP Valve	Cric Kit, LMA/SGA, lidocaine and ketamine IM	Fentanyl TML, Perc PO, Ketamine IM/ IV	Urinalysis test strips, fluorescein strips	Compct Foley kit, Sterile kerlix, litter padding	Cric, 10gNeedle D Scalpel	Cell Phone and call sheet	Have checklist available
Truck	BP Cuff, Stethescope, capnometry, small monitor	Casre LR, Additional FWB Kits, 3% Saline	SAVent or SAVE 2	RSI, LMA/SGA, Cric kit ketamine bag IV	Ketamine IV with midazolam	Blood tubes to drop off labs on the way	Padded litter, NG,	Sterile Chest Tube Kit with drapes	Cell phone and call sheet, sat phone, radio	Checklist plus flight evac kit
House	Add defibrillation	2 additional cases LR, Case NS, Additional 3% Saline	Impact Vent and O2 bottle	All from above Add Benzo if not available for truck	Same as above	Blood tubes to run labs to local clinic	Real matress with head elevated, nursing care kit sleeping bg	Sterile Surgical Kit with Drapes, Gowns and scrub soap	Secure comms, email	Extensive evac kit
Plane	Take all of above	All of above	Impact vent on O2	All above calculate for flight and double	All above calculate for flight and double		Padded Litter, Sleeping Bag	10g needle D Chest tube kit Cric kit	Through aircraft	From Above

SERE Medicine

SERE Medicine, Chapter 5 of Survival Evasion Resistance Escape (SERE) Operations (AF Handbook 10-644) (27 March 2017) discusses in detail healthcare procedures that may be used by isolated personnel. The text of that chapter is reproduced here for your use in the practice of guerrilla medicine.

SERE medicine addresses the use of expedient techniques which can aid survival in a field or captivity environment when more traditional methods are unavailable. An isolated person's (IP's) situational awareness will help determine the appropriate treatment based on their situation. The procedures in this chapter must be viewed in the reality of a true isolating event. The results of treatment may be substandard when compared with present medical standards. However, these procedures will not compromise professional medical care which becomes available following recovery. Moreover, in the context of an isolating event, they may represent the best available treatment to extend the individual's life expectancy.

SERE medicine encompasses procedures and expedients that are required and available for the preservation of health and the prevention, improvement, or treatment of injuries and illnesses encountered during an isolating event. It must also be suitable for application by nonmedical personnel to themselves or others in the circumstances of the isolating event. SERE medicine is more than first aid in the conventional sense. It approaches final definitive treatment in that it is not dependent upon the availability of technical medical assistance within a reasonable period of time.

5.2. Basic Health Care

In a survival situation, cleanliness is essential to prevent infection. Adequate personal cleanliness will not only protect against disease germs

that are present in the individual's surroundings, but will also protect the group by reducing the spread of these germs.

5.2.1.1. Washing

Washing, particularly the face, hands, and feet, reduces the chances of infection from small scratches and abrasions. A daily bath or shower with hot water and soap is ideal. If a tub or shower is not available, the body should be cleaned with a cloth and soapy water, paying particular attention to the body creases (armpits, groin, etc.), face, ears, hands, and feet. After this type of "bath", the body should be rinsed thoroughly with clear water to remove all traces of soap, which could cause irritation.

5.2.1.2. Substitute when Soap is Unavailable

Soap, although an aid, is not essential to keeping clean. Ashes, sand, loamy soil, and other expedients may be used to clean the body as well as clean cooking utensils.

5.2.1.3. Air Baths When Water is in Short Supply

When water is in short supply, the IP should take an "air bath." All clothing should be removed and the body simply exposed to the air. Exposure to sunshine is ideal, but even on an overcast day or indoors, a two-hour exposure of the naked body to the air will refresh the body. Care should be taken to avoid sunburn when bathing in this manner. Exposure in the shade, shelter, sleeping bag, etc., will help if the weather conditions do not permit direct exposure.

5.2.1.4. Keeping Hair Trimmed

Hair should be kept trimmed; preferably two inches or less in length, and the face should be clean-shaven. Hair provides a surface for the attachment of parasites and the growth of bacteria. Keeping the hair short and the face clean-shaven will provide fewer habitats for these organisms. At least once a week, the hair should be washed with soap and water. When water is in short supply, the hair should be combed or brushed

thoroughly and covered to keep it clean. It should be inspected weekly for fleas, lice, and other parasites. When parasites are discovered, they should be removed.

5.2.1.5. Infection and Open Wounds

The principal means of infecting food and open wounds is when they come in contact with unclean hands. Hands should be washed with soap and water, if available, after handling any material which is likely to carry germs. This is especially important after each visit to the latrine, when caring for the sick and injured, and before handling food, food utensils, or drinking water. The fingers should be kept out of the mouth and the fingernails kept closely trimmed and clean. A scratch from a long fingernail could develop into a serious infection.

5.2.2. Care of the Mouth and Teeth

Application of the following fundamentals of oral hygiene will prevent tooth decay and gum disease. The mouth and teeth should be cleansed thoroughly with a toothbrush and toothpaste at least once each day. When a toothbrush is not available, a "chewing stick" can be fashioned from a twig. The twig should be washed, and then chewed on one end until it is frayed and brush-like. The teeth can then be brushed very thoroughly with the stick, taking care to clean all tooth surfaces. If necessary, a clean strip of cloth can be wrapped around the finger and rubbed on the teeth to wipe away food particles which may have collected. When neither toothpaste nor toothpowders are available, salt, soap, or baking soda can be used as a substitute. Gargling with Willow bark tea will help protect the teeth and relieve pain. Gum tissues should be stimulated by rubbing them vigorously with a clean finger each day.

5.2.2.1. Removing Food Debris

Food debris which has accumulated between the teeth should be removed by using dental floss or toothpicks. The latter can be fashioned

from small twigs. Parachute inner core can be used by separating the filaments of the inner core and using this as a dental floss. Dental floss can also be improvised from fishing line.

5.2.2.2. Cleaning Dentures and Removable Bridges

Use as much care cleaning dentures and other dental appliances, removable or fixed, as when cleaning natural teeth. Dentures and removable bridges should be removed and cleaned with a denture brush or "chew stick" at least once each day. The tissue under the dentures should be brushed or rubbed regularly for proper stimulation. Removable dental appliances should be removed at night or for a two- to three-hour period during the day.

5.2.2.3. Dental Problems

Dental Problems were a common issue among captives, not only during confinement, but also before capture. Periodontitis (inflammation of tissue surrounding the tooth), pyorrhea (discharge of pus), and damage to teeth consistent with poor hygiene and "wear and tear" were also present.

5.2.2.4. Toothaches

Specific complaints such as pain associated with the common toothache represented one of the most distressing problems faced by past POWs. Along with toothaches, captives may have to deal with facial injury during egress, or caused by physical abuse during interrogation

5.2.2.5. Maintaining a Well-Maintained Cleaning Program

The basic principle of maintaining a well-planned cleaning program using fiber, brushes, or branches certainly contributed to the relatively low incidence of cavities and infection among POW's. The lancing of an abscess using bamboo sticks, although not a professional maneuver has merit insofar as the pressure is relieved and the tendency to develop into cellulitis (widespread infection) decreased. The application of aspirin directly into the cavity should be discouraged. The most effective tool

against dental complications in captivity is proper preventive dentistry. The present program, if adhered to, is adequate to ensure a high state of dental hygiene while captive. Dental pain/problems were a major concern mentioned by POWs after their return from captivity during the Vietnam War. Dental pain made eating what little food they received difficult, disrupted times when they were left alone by their captors, and could undermine all other activities.

5.2.3. Care of the Feet

Proper care of the feet is of utmost importance in a survival situation, especially if the IP has to travel. Serious foot trouble can be prevented by observing the following simple rules.

5.2.3.1. Washing or Air Cleaning Feet

The feet should be washed, dried thoroughly, and massaged each day. If water is in short supply, the feet should be "air cleaned" along with the rest of the body.

5.2.3.2. Trimming Toenails

Toenails should be trimmed straight across to prevent the development of ingrown toenails.

5.2.3.3. Proper Fitting and Breaking in Boots

Boots should be broken in before wearing them on any mission. They should fit properly, neither so tight that they bind and cause pressure spots nor so loose that they permit the foot to slide forward and backward when walking. Insoles can be improvised to reduce any friction spots inside the shoes.

5.2.3.4. Socks

Socks should be large enough to allow the toes to move freely but not so loose that they wrinkle. Wool socks should be at least one size larger than cotton socks to allow for shrinkage. Socks with holes should be

properly darned before they are worn. Wearing socks with holes or socks that are poorly repaired may cause blisters. Clots of wool on the inside and outside should be removed from wool socks because they may cause blisters. Socks should be changed and washed thoroughly with soap and water each day. Woolen socks should be washed in cool water to lessen shrinkage and turned inside out when cleaned. In camp, freshly laundered socks should be stretched to facilitate drying by hanging in the sun or in an air current. While traveling, a damp pair of socks can be dried by placing them inside layers of clothing or securing them on the outside of the pack. If socks become damp, they should be exchanged for dry ones at the first opportunity.

5.2.3.5. Examining Feet Regularly

When Traveling When traveling, the feet should be examined regularly to see if there are any red spots or blisters. If detected in the early stages of development, tender areas should be covered with adhesive tape to prevent blister formation.

5.3. Clothing and Bedding

Clothing and bedding can become contaminated with any disease germs which may be present on the skin, in the stool, in the urine, or in secretions of the nose and throat. Therefore, keeping clothing and bedding as clean as possible will decrease the chances of skin infection and decrease the possibility of parasite infestation. Outer clothing should be washed with soap and water when it becomes soiled. Socks and under clothes should be changed daily. If water is in short supply, clothing should be "air cleaned. "For air cleaning, the clothing is shaken outside, then aired and sunned for two hours. Clothing cleaned in this manner should be worn in rotation. Sleeping bags should be turned inside out, fluffed, and aired after each use. Bed linen should be changed at least once a week, and the blankets, pillows, and mattresses should be aired and sunned.

5.3.1. Rest

Rest is necessary for the IP because it not only restores physical and mental vigor, but also promotes healing during an illness or after an injury.

5.3.1.1. Planning Session

In the initial stage of the survival episode, rest is particularly important. After those tasks requiring immediate attention are done, the IP should inventory available resources, decide upon a plan of action, and even have a meal. This "planning session" will provide a rest period without the IP having a feeling of "doing nothing."

5.3.1.2. Planned Rest Periods

If possible, regular rest periods should be planned in each day's activities. The amount of time allotted for rest will depend on a number of factors, including the IP's physical condition, the number of IP, the presence of hostile forces, etc. Usually, 10 minutes each hour should be sufficient. During these rest periods, the IP should change either from physical activity to complete rest or from mental activity to physical activity as the case may be. The IP must learn to become comfortable and to rest under less-than-ideal conditions.

5.4. Illness

Many illnesses which are minor in a normal medical environment become major in a survival situation when the individual is alone without medications or medical care. IP should use standard methods (treat symptoms) to prevent expected diseases since treatment in a survival situation is so difficult. In an isolating event, whether short-term or long-term, the dangers of disease are multiplied. Key preventive methods are to maintain a current immunization record, maintain a proper diet, and exercise.

5.4.1. Personal Hygiene

Application of the following simple guidelines regarding personal hygiene will enable the IP to safeguard personal health and the health of others:

- All water obtained from natural sources should be disinfected before consumption if possible.
- The ground in the camp area should not be soiled with urine or feces. Latrines should be used. When no latrines are available, individuals should dig "cat holes" and cover their waste.
- Fingers and other contaminated objects should never be put into the mouth. Hands should be washed before handling any food or drinking water, before using the fingers in the care of the mouth and teeth, before and after caring for the sick and injured, and after handling any material likely to carry disease or germs.
- After each meal, all eating utensils should be cleaned and disinfected in boiling water.
- The mouth and teeth should be cleansed thoroughly at least once each day.
- Bites and insects can be avoided by keeping the body clean, by wearing proper protective clothing, and by using a head net, improvised bed nets, and insect repellants.
- Wet clothing should be exchanged for dry clothing as soon as possible to avoid unnecessary body heat loss.
- Personal items such as canteens, pipes, towels, toothbrushes, handkerchiefs, and shaving items should not be shared with others.
- All food scraps, cans, and refuse should be removed from the camp area and buried.
- If possible, an IP should get seven or eight hours of sleep each night.

5.4.2. Food Poisoning

Food poisoning is a significant threat to IP. Due to sporadic food availability, excess foods must be preserved and saved for future

consumption. Methods for food preservation vary with the global area and situation. Bacterial contamination of food sources has historically caused much more difficulty in survival situations than the ingestion of poisonous plants and animals. Similarly, dysentery or water-borne diseases can be controlled by proper sanitation and personal hygiene. If the food poisoning is due to toxins such as staphylococcus or botulism (acute symptoms of nausea, vomiting, and diarrhea soon after ingestion of the contaminated food), supportive treatment is best. Keep the patient quiet, lying down, and ensure the patient drinks substantial quantities of water. If the poisoning is due to ingestion of bacteria which grow within the body, (delayed gradual onset of same symptoms), take antibiotics (if available). In both cases, symptoms may be alleviated by frequently eating small amounts of fine, clean charcoal. In POW situations, if chalk is available, reduce it to powder, and eat to coat and soothe the intestines. Proper sanitation and personal hygiene will help prevent spreading infection to others in the party or continuing re-infection of the patient.

5.4.3. Gastrointestinal Problems

Gastrointestinal problems often occur while in captivity.

5.4.3.1. Diarrhea and Dysentery

Diarrhea and Dysentery are common ailments in captivity. Symptoms of diarrhea and dysentery include violent explosive uncontrollable discharge with possible passage of mucous and blood. They are commonly caused by ingesting contaminated food and water, poor sanitation and hygiene, viral infections, and nutritional disturbances. Treatment can involve diet restrictions (solid food denial and increased liquid intake). Restrict intake to nonirritating foods (avoid vegetables and fruits), establish hygienic standards, increase fluid intake, and, when available, use anti-diarrheal agents. Captives can use a more exotic therapeutic regimen consisting of eating cooked green bananas, tea from

specific tree bark, and drinking a quarter teaspoon of ground charcoal or chalk mixed with a quart of disinfected water.

5.4.3.2. Worms and Intestinal Parasites

Worms were extremely common in captivity. Twenty-eight percent of the released prisoners in the Vietnam War indicated worms as a significant medical problem during captivity.

- Danya Curry and Heather Mercer were held as prisoners by the Taliban, ultimately being rescued by Special Forces after 9/11. After three months of captivity, Heather had been given prescription medication to get rid of worms. Half way through the six pill treatment, one night she felt a "string" resting on her tongue, when she pulled it out; it was identified as a 10" worm. Later that night more worms attempted to crawl out, later diagnoses indicated that her infestation was so severe that the worms crawled out not because of the medicine, but they had "nowhere else to go".

5.4.3.2.1. Symptoms and Care of Worm Infestation

Seldom fatal, worms are significant, as they can lower the general resistance other illnesses of the individual. Common identifiers of worms include severe rectal itching, insomnia, and restlessness. Worms often cause gastrointestinal problems similar to those resulting from a variety of other causes. Prevention can be a simple and readily obtainable goal. Worms and intestinal parasites can be caused by undercooked or contaminated food, poor sanitation, and infected water sources. Treatments can include the ingestion of peppers which contain certain substances chemically similar to morphine. They are effective as a counter-irritant for decreasing bowel activity. Also, pumpkin seeds can be ground up and mixed with water into a "medicinal" porridge or a cup of tea made from one to two grams of thyme multiple times per day can be ingested. Lastly, shoes should be worn, when possible, hands should be washed after defecation, and fingernails should be trimmed close and frequently.

5.4.4. Nutritional Deficiencies

Nutritional deficiencies are caused by a lack of a specific nutrient that the body requires. Prevention for all nutritional disease include keeping the IP in good physical condition prior to the isolating event, educate themselves on local food sources, and eating everything and anything which is not harmful to themselves (balanced diet).

5.4.4.1. Vitamin B Deficiency (Beriberi)

Beriberi is a nutritional disease resulting from a deficiency of vitamin B (Thiamine). Early signs and symptoms of the disease include muscle weakness and atrophy, loss of vibratory sensation over parts of the extremities, numbness, and tingling in the feet. According to captives, Beriberi's primary manifestation was pain in the feet described as "a minor frostbite that turned to shooting pains". It is difficult to formulate a diagnosis for Beriberi. The treatment is to increase caloric intake by eating anything of value, especially items high in vitamin B such as green peas, cereal grains, and unpolished rice.

5.4.4.2. Vitamin A Deficiency

There were several reported cases of decreased vision (primarily at night) attributed to vitamin A deficiency. This problem usually occurred during periods of punishment or politically provoked action when food was withheld as part of the discipline. The condition responded well to increased caloric intake and deserves little special mention. An understanding of the transient nature of this problem and its remedial response to therapy is important.

5.4.5. Skin Diseases

Boils, fungi, heat rash, and insect bites appeared frequently and typically remain a problem throughout the captivity experience. Preventing different types of skin diseases can be simple. Common preventions include practicing sterility when handling skin conditions,

cleanliness, exposure to sunlight, keeping skin dry, and getting adequate nutrition.

5.4.5.1. Lesions

Dermatological lesions are common to various prison experiences. Their importance lies not in their lethality, but for their irritant quality and the debilitating and grating effect on morale and mental health.

5.4.5.2. Fungal Infections

Fungal infections were a common skin problem for those in tropical captivity settings. As with other skin lesions, they are significant for their noxious characteristics and weakening effect on morale and mental health. Superficial fungal infections of the skin are widespread throughout the world. Their frequency among POWs reflects the favorable circumstances of captivity for cultivating fungal infections. Treatment may consist of the removal of body hair (to prevent or improve symptoms in the case of heat rash), exposure to sunlight to dry out fungal lesions, and development of effective techniques to foster body cooling and to decrease heat generation. Considerable effort should be directed at keeping the body clean.

5.4.5.3. Boils and Blisters

Boils and blisters are typically deep-seated infection that usually involves the hair follicles and adjacent subcutaneous tissue, especially parts exposed to constant irritation. Boils and blisters are typically caused by warm humid dark places, poor sanitation and hygiene, and will increase with malnutrition and exhaustion. Boils seldom appear singularly. Once present, they are disseminated by fingers, clothing, and discharges from the nose, throat, and groin. Throughout the history of POW captivity, self-treatment was practiced primarily when there was distrust of captor techniques. Prisoners would attempt to lance the boil with any sharp instrument such as a needle, wire, splinters, etc., and exude their contents by applying pressure. The area was then covered with toothpaste and

when available, iodine. Modern therapy consists of hot compresses to hasten localization, and then conservative incision and drainage. Topical antibiotics and systemic antibiotics are then used. Boils increase in frequency with a decrease in resistance as seen in malnutrition and exhaustion states in a tropical environment. The application of any material or medication with a cleansing effect may be used (soaks in saline, soap, iodine, and topical antibiotics).

5.5. Injury

Injuries are possible during any isolating event. In isolating events involving captivity, it is likely that an IP will begin their captivity experience with pre-capture injuries such as burns, wounds, fractures, and lacerations as well as the possibility of other injuries occurring from the captor's physical abuse. The practice of a few simple rules will generally lead to acceptable results in wound treatment. Also, if necessary, much can be done after reintegration to correct cosmetic and functional defects that may occur during an isolating event.

5.5.1. General Management of Injuries

5.5.1.1. Bleeding

Bleeding is the first and most important concern and must be controlled as soon as possible. Controlling bleeding is important because in survival situations, replacement transfusions are not possible. Immediate Self-Aid-Buddy-Care (SABC) steps should be taken to stop the flow of blood, regardless of its source. The method used should be commensurate with the type and degree of bleeding. Most bleeding can be controlled by direct pressure on the wound and that should be the first treatment used. To control bleeding by direct pressure on the wound, sufficient pressure must be exerted to stop the bleeding, and that pressure must be maintained long enough to "seal off" the bleeding sources. It is best to apply the pressure and keep it in place for up to 20 minutes. Alternate pressing and then releasing to see if the wound is still bleeding is not desirable. Oozing

blood from a wound of an extremity can be slowed or stopped by elevating the wound above the level of the heart.

5.5.1.1.1. Pressure Points to Stop Hemorrhaging

If direct pressure fails, the next line of defense would be the use of classic pressure points to stop hemorrhaging.

5.5.1.1.2. Tourniquet

The last method for controlling hemorrhage would be the tourniquet. The tourniquet should only be used as a last resort. Even in more favorable circumstances where the tourniquet can be applied as a first aid measure and left in place until trained medical personnel remove it, the tourniquet may result in the loss of a limb. The tourniquet should be used only when all other measures have failed, and it is a life and death matter. A tourniquet, when required and properly used, will save life. The basic characteristics of a tourniquet and the methods of its use are well covered in standard first aid texts; however, certain points merit emphasis in survival medicine. A tourniquet should be used only after every alternate method has been attempted. If unable to get to medical aid, after 15 to 20 minutes, the IP should gradually loosen the tourniquet. If bleeding has stopped, remove the tourniquet; if bleeding continues, reapply and leave in place. The tourniquet should be applied as near the site of the bleeding as possible, between the wound and the heart, to reduce the amount of tissue lost. NOTE: Use of a constricting band that reduces rather than stops blood flow is NOT recommended. It does not allow for venous blood return.

5.5.1.2. Pain

The control of pain accompanying disease or injury under survival situations is both difficult and essential. In addition to its morale-breaking discomfort, pain contributes to shock and makes the IP more vulnerable to enemy influences. Ideally, pain should be eliminated by the removal of the cause. However, this is not always immediately possible. Therefore,

measures for the control of pain are beneficial. Position, heat, and cold can be applied alone or in conjunction with each other.

5.5.1.2.1. Position

The part of the body that is hurting should be put at rest, or at least its activity restricted as much as possible. The position selected should be the one giving the most comfort, and be the easiest to maintain. Splints and bandages may be necessary to maintain immobilization of the affected area. Elevation of the injured part, with immobilization, is particularly beneficial for throbbing type pain such as is typical of the "mashed" finger. Open wounds should be cleansed, foreign bodies removed, and a clean dressing applied to protect the wound from the air and chance contacts with environmental objects to help reduce pain.

5.5.1.2.2. Heat and Cold

Generally, the application of warmth reduces pain such as toothache, bursitis, etc. However, in some conditions, application of cold on injuries such as strains and sprains has the same effect. Warmth or cold is best applied by using water-soaked rags, materials, or water filled storage bags. This works well due to water's high specific heat. The IP can try both to determine which is most beneficial. Caution should be used when placing hot or cold materials in direct contact with skin to avoid additional injuries.

5.5.1.2.3. Pain Killers

Drugs are very effective in reducing pain. However, they are not likely to be available in the survival situation unless the IP adds them to a personal survival kit. "Natural" procedures can be an alternative to pain killers in a survival situation. If drugs are not available, there are some parts of vegetation which can be used. For example, parts of the Willow tree have been used for their pain-relieving and fever-lowering properties for hundreds of years. The fresh bark contains salicin, a substance that chemically resembles aspirin. It temporarily relieves headache,

stomachache, and other body pain. Salicin is metabolized in to salicylic acid in the human body, which is a precursor of aspirin. Boiling eight to ten six-inch stalks in two cups of water until water turns into tea will yield a pain-relieving drink. Wintergreen was also traditionally used for body aches and pains as well. Boil a half a cup of leaves into a tea and ingest the tea to reduce pains. Also, the boiled bark of the magnolia tree helps relieve internal pains and fever, and has been known to stop dysentery. To be effective controlling pain, stronger narcotic drugs such as codeine and morphine are required.

5.5.1.3. Shock

In essence, shock is a circulatory reaction of the body (as a whole) to an injury (mechanical or emotional). All IP should be familiar with the signs and symptoms of shock so that the condition may be anticipated, recognized, and dealt with effectively. However, the best survival approach is to treat all moderate and severe injuries for shock. No harm will be done, and such treatment will speed recovery. Normally, fluids administered by mouth are generally prohibited in the treatment of shock following severe injury. Such fluids are poorly absorbed when given by mouth, and they may interfere with later administration of anesthesia for surgery. In survival medicine, however, the situation is different in that the treatment being given is the final treatment. IP cannot be deprived of water for long periods just because they have been injured; in fact, their recovery depends upon adequate hydration. Small amounts of warm water, warm tea, or warm coffee given frequently early in shock are beneficial if the patient is conscious, can swallow, and has no internal injuries. In later shock, fluids by mouth are less effective as they are not absorbed from the intestines. Burns, in particular, require large amounts of water to replace fluid lost from injured areas. Alcohol should never be given to a person in shock or who may go into shock.

5.5.2. Infections

Infection is a serious threat to the IP. In survival medicine, one must place more emphasis on the prevention and control of infection by applying techniques identified throughout this handbook. In survival or captivity, consider all breaks in the skin due to mechanical trauma contaminated, and treat appropriately. Even superficial scratches should be cleaned with soap and water and treated with antiseptics, if available.

5.5.2.1. Basic Treatment

Water is the most universally available cleaning agent, and should be (preferably) sterile. At sea level, sterilize water by placing it in a covered container and boiling it for 10 minutes. Above 3,000 feet, water should be boiled for one hour (in a covered container) to ensure adequate sterilization. The water will remain sterile and can be stored indefinitely as long as it is covered. When water is not available for cleaning wounds, the IP should consider the use of urine. Urine may well be the most nearly sterile of all fluids available and, in some cultures, is preferred for cleaning wounds. IP should use urine from the midstream of the urine flow. Antiseptics should generally not be used in wounds which go beneath the skin's surface since they may produce tissue damage which will delay healing. Open wounds must be thoroughly cleansed with disinfected water. Irrigate wounds rather than scrubbing to minimize additional damage to the tissue. Bits of debris such as clothing, plant materials, etc., should be rinsed out of wounds by pouring large amounts of water into the wounds and ensuring that even the deepest parts are clean. In a fresh wound where bleeding has been a problem, care must be taken not to irrigate so vigorously that clots are washed away and the bleeding resumes. Allow a period of about an hour after the bleeding has been stopped before beginning irrigation with the disinfected water. Begin gently at first, removing unhealthy tissue, increasing the vigor of the irrigation over a period of time. If the wound must be cleaned, use great care to avoid doing additional damage to the wound. The wound should be left open to promote cleansing and drainage of infection.

5.5.2.2. The "Open Treatment" Method

This is the only safe way to manage survival wounds. Efforts to close open wounds by suturing or by other procedure should not be made. In fact, it may be necessary to open the wound even more to avoid entrapment or infection and to promote drainage. The term "open" does not mean that dressings should not be used. Good surgery requires that although wounds are not "closed," nerves, bone, and blood vessels should be covered with tissue. Such judgment may be beyond the capability of the IP, but protection of vital structures will aid in the recovery and ultimate function. A notable exception to "open treatment" is the early closure of facial wounds which interfere with breathing, eating, or drinking. Wounds, left open, heal by formation of infection resistant granulation tissue (proud flesh). This tissue is easily recognized by its moist red granular appearance, a good sign in any wound. Frequently, immobilization will hasten the healing of major lacerations. While in captivity, deep open wounds will become infested with maggots frequently. The natural tendency is to remove these maggots, but actually, they do a good job of cleansing a wound by removing dead tissue. Maggots may, however, damage healthy tissue when the dead tissue is removed. So the maggots should be removed if they start to affect healthy tissue.

5.5.2.3. Maggot Therapy

The scavenging activity of the maggots actually removes dead tissue. The maggots excrete a digestive fluid which liquefies the tissue proteins, which the maggots then ingest. The maggots exude calcium carbonate which alkalizes the wound and increases the destruction of bacteria and dead tissue by the body's white blood cells. The maggot's excretion also contains two chemicals which stimulate growth of healthy tissue and hasten wound healing. Excretions contain both allantoin and urea which stimulate growth of healthy tissue and hasten wound healing.

5.5.2.4. Physiological "Logistics"

Despite all precautions, some degree of infection is almost universal in survival wounds. This is the primary reason for the "open" treatment advocated above. The human body has a tremendous capacity for combating infections if it is permitted to do so. The importance of proper rest and nutrition to wound healing and infection control has been mentioned earlier. In addition, the "logistics" of the injured body part should be improved. The injury should be immobilized in a position to favor adequate circulation, both to and from the wound. Avoid constrictive clothing or bandages. Applying heat to an infected wound will further aid in mobilizing local body defense measures. Soaking the wound in lukewarm saltwater will help draw out infection and promote oozing of fluids from the wound, thereby removing toxic products. Poultices, made of clean clay, shredded tree bark with antiseptic qualities, ground grass seed, etc., will also draw out the infection.

- For bee stings and other common skin problems, use clay with disinfected water. Mix together, using only enough water to form a thick paste, and apply it on the problem area. Let the clay dry for about 20 minutes, and then rinse it off with cool disinfected water.
- For a ground seed poultice, insert the ground seed between the third and fourth layers of gauze or bandage material and close. Pour hot water over the gauze to release the flaxseed's essential oils. Set the poultice aside to cool. Apply the poultice to the wound using medical tape to secure it in place.

5.5.2.5. Drainage

Adequate natural drainage of infected areas promotes healing. Generally, wicks or drains are unnecessary. On occasion, it may be better to remove an accumulation of pus (abscess) and insert light, loose packing to ensure continuous drainage. The knife or other instrument used in making the incision for drainage must be sterilized to avoid introducing other types of organisms. The best way to sterilize in the field is with dry or moist heat.

5.5.2.6. Debridement

Debridement is the surgical removal of lacerated, devitalized, or contaminated tissue. The debridement of severe wounds may be necessary to minimize infection (particularly of the gas gangrene type) and to reduce septic (toxic) shock. In essence, debridement is the removal of foreign material and dead or dying tissue. The procedure requires skill and should only be done by nonmedical personnel in case of dire emergency. If required, follow these general rules. Dead skin must be cut away. Muscle may be trimmed back to a point where bleeding starts and gross discoloration ceases. Fat which is damaged tends to die and should be cut away. Bone and nerves should be conserved where possible and protected from further damage. Provide ample natural drainage for the potentially infected wound and delay final closure of the wound.

5.5.2.7. Sutures

On occasion, it may be necessary to suture the wound, despite the danger of infection, in order to control bleeding or increase the mobility of the patient. If a needle is available, thread may be procured from parachute lines, fabric, or clothing, and the wound closed by "suturing." If suturing is required, place the stitches individually and far enough apart to permit drainage of underlying parts. Do not worry about the cosmetic effect; just approximate the tissue. For scalp wounds, hair may be used to close after the wound is cleansed. Infection is less a danger in this area due to the rich blood supply. Remember that in most situations, it is imperative that the wound be left open and allowed to drain.

5.5.2.8. Dressings and Bandages

After cleansing, some wounds should be covered with a clean dressing. The dressing should be sterile. However, in the survival situation, any clean cloth will help to protect the wound from further infection. A proper bandage will anchor the dressing to the wound and afford further protection. Bandages should be snug enough to prevent slippage, yet not

constrictive. Slight pressure will reduce discomfort in most wounds and help stop bleeding. Once in place, dressings should not be changed too frequently unless required. External soiling does not reduce the effectiveness of a dressing, and pain and some tissue damage will accompany any removal. In addition, changing dressings increases the danger of infection.

5.5.3. Lacerations

When soft tissue is split, torn, or cut, there are three primary concerns: 1) bleeding, 2) infection, and 3) healing of the wound. See bleeding section under General Management of Injuries 5.5.1.1.

5.5.3.1. Infection

Infection is the second concern when dealing with lacerations. It is extremely important that an IP take proper precaution to prevent wounds from becoming infected.

5.5.3.2. Healing

An open wound will heal by a process known as granulation. During the healing phase, the wound should be kept as clean and dry as possible. For protection, the wound may be covered with clean dressings to absorb the drainage and to prevent additional trauma to the wound. These dressings may be loosely held in place with bandages (clean material may be used for dressings and bandages). The bandages should not be tight enough to close the wound or to impair circulation. At the time of dressing change, disinfected water may be used to gently rinse the wound. The wound may then be air dried and a clean dressing applied (the old dressing may be boiled, dried, and reused). Nutritional status is interrelated with the healing process, and it is important to consume all foods available to provide the best possible opportunity for healing.

5.5.4. Fractures and Sprains

Throughout history, captive therapy was primarily that of helping each other to exercise or immobilize the injured area, and in severe cases, to provide nursing care. In survival medicine, the initial immobilization is part of the ultimate treatment. In addition, immobilization in proper position hastens healing of fractures and improves the ultimate functional result. In an isolating event, the immobilization must suffice for a relatively long period of time and permit the patient to maintain a fairly high degree of mobility. Materials for splinting and bandaging are available in most survival situations, and proper techniques are detailed in SABC.

5.5.4.1. Fractures

Bone fractures are of two general types, open and closed. The open fracture is associated with a break in the skin over the fracture site which may range all the way from a broken bone protruding through the skin to a simple puncture from a bone splinter. The general goals of fracture management are: restore the fracture to a functional alignment; immobilize the fracture to permit healing of the bone and rehabilitation.

5.5.4.1.1. Reducing Fractures

The reduction of fractures is normally beyond the scope of first aid; however, in the prolonged survival situation, the correction of bone deformities is necessary to hasten healing and obtain the greatest functional result. The best time for manipulation of a fracture is in the period immediately following the injury, before painful muscle spasms ensue. Restoring or reducing the fracture simply means realigning the pieces of bones, putting the broken ends together as close to the original position as possible. The natural ability of the body to heal a broken bone is remarkable and it is not necessary that an extremity fracture be completely straight for satisfactory healing to occur. However, in general, it is better if the broken bone ends are approximated so that they do not override. Fractures are almost always associated with muscle spasms which become stronger with time. The force of these muscle spasms tends to cause the

ends of the broken bones to override one another, so the fracture should be reduced as soon as possible. To overcome the muscle spasm, force must be exerted to reestablish the length of the extremity. Traction is applied by firmly and steadily pulling on the extremity until overriding fragments of bone are brought into line (check by the other limb). If the IP is alone, the problem is complicated but not impossible. Traction can still be applied by using gravity. The distal portion of the extremity is tied to (or wedged) into the fork of a tree or similar point of fixation. The weight of the body is then allowed to exert the necessary traction, with the joint being manipulated until the dislocation is reduced. Frequently, it is advantageous to continue traction after reduction to ensure the proper alignment of the bones. Once the ends of the bone are realigned, the force of the muscle spasm tends to hold the bones together.

5.5.4.1.2. Immobilizing Fractures

At this point, closed fractures are ready to be immobilized, but open fractures require treatment of the soft tissue injury in the manner outlined earlier. In other words, the wound must be cleansed and dressed, and then the extremity should be immobilized. The immobilization preserves the alignment of the fracture and prevents movement of the fractured parts which would delay healing. Once the extremity is immobilized the pulse should be repeatedly checked at the farthest part of the immobilized limb to ensure circulation. For fractures of long bones of the body, it becomes important to immobilize the joints above and below the fracture site to prevent movement of the bone ends. For example, in a fracture of the mid forearm, both the wrist and the elbow should be immobilized. In immobilizing a joint, it should be fixed in a "neutral" or functional position. That is, neither completely straight nor completely flexed or bent, but in a position approximately midway between. In splinting a finger, for example, the finger should be curved to about the same position the finger would naturally assume at rest.

5.5.4.2. Sprains

An acute non-penetrating injury to a muscle or joint is best managed by applying cold as soon as possible after the injury. Icepacks or cold compresses should be used intermittently for up to 48 hours following the injury. This will minimize hemorrhage and disability. Be careful not to use snow or ice to the point where frostbite or cold injury occurs. As the injured part begins to become numb, the ice should be removed to permit re-warming of the tissues. Then the ice can be reapplied. Following a period of 48 to 72 hours, the cold treatment can be replaced by warm packs to the affected area. A "sprain or strain" may involve a wide variety of damage ranging from a simple bruise to deep hemorrhage or actual tearing of muscle fibers, ligaments, or tendons. While it is difficult to establish specific guidelines for treatment in the absence of a specific diagnosis, in general, injuries of this type require some period of rest (immobilization) to allow healing. The period of rest is followed by a period of rehabilitation (massage and exercise) to restore function. For what appears to be a simple superficial muscle problem, a period of five to 10 days rest followed by a gradual progressive increase in exercise is desirable. Pain should be a limiting factor. If exercise produces significant pain, the exercise program should be reduced or discontinued. In captivity, it is probably safest to treat severe injuries to a major joint like a fracture with immobilization (splint, cast) for a period of four to six weeks before beginning movement of the joint.

5.5.4.3. Splints

A splint of any rigid material such as boards, branches, bamboo, metal boot insoles, or even tightly rolled newspaper may be almost as effective as plaster or mud casts. In conditions such as continuous exposure to wetness, the splint can be cared for more effectively than the plaster or mud cast. Also, in cases where there is a soft tissue wound in close proximity to the fracture, the splint method of immobilization is more desirable than a closed cast because it permits change of dressing, cleaning, and monitoring of the soft tissue injury. Improvising a splint using

available materials may be done using the materials listed above or using several parallel, pliable branches, woven together with vines, cords, or parachute lines. Use care so that the extremity is not constricted when swelling follows the injury. The fracture site should be loosely wrapped with parachute, other type of cloth, or soft plant fibers. The splints can then be tied in place extending at least the entire length of the broken bone and preferably fashioned in such a way as to immobilize the joint above and below the fracture site. Splinting or immobilizing materials should be insulated to avoid heat/cold injuries as well as improve comfort. It may be necessary to preserve the mobility of the IP after reduction of the fracture. This is difficult in fractures of the lower extremities, although tree limbs may be improvised as crutches. With companions, the use of improvised litters may be possible.

5.5.4.4. Immobilization Duration

The time required for immobilization to ensure complete healing is very difficult to estimate. It must be assumed that healing time will, in general, be prolonged. This means that for a fracture of the upper extremity of a "non-weight bearing bone," immobilization might have to be maintained for eight weeks or more to ensure complete healing. For a fracture of the lower extremity or a "weight bearing bone," it might require 10 or more weeks of immobilization.

5.5.4.5. Swelling

While a limb is immobilized swelling is a common side effect that will need to be dealt with. Keeping the limb elevated as much as possible throughout the day to aid in circulation will help.

5.5.4.6. Rehabilitation

Following the period of immobilization and fracture healing, a program of rehabilitation is required to restore normal functioning. Muscle tone must be re-established and the range of motion of immobilized joints

must be restored. In cases where joints have been immobilized, the rehabilitation program should be started with "passive range of motion exercises". This means moving the joint through a range of motion without using the muscles which are normally used to move that joint. For example, if the left wrist has been immobilized, a person would begin the rehabilitation program by using the right hand to passively move the left wrist through a range of motion which can be tolerated without pain. When some freedom of motion of the joint has been achieved, the individual should begin actively increasing that range of motion using the muscles of the joint involved. Do not be overly forceful in the exercise program. Using pain as a guideline, the exercise should not produce more than minimal discomfort. Over a period of time, the joint movement should get progressively greater until the full range of motion is restored. Also, exercises should be started to restore the tone and strength of muscles which have been immobilized. Again, pain should be the limiting point of the program and progression should not be so rapid as to produce more than a minimal amount of discomfort.

5.5.5. Burns

Burns, encountered in isolating events, pose serious problems. Burns cause severe pain, increase the probability of shock and infection, and offer an avenue for the loss of considerable body heat, fluids, and salts. Initially, cooling a small area burn (10 percent of the body or less than any single extremity) by immersing in cool water or using a cold, moist, compress will provide relief from pain. Treating larger burns with cool water is risky due to the danger of hypothermia. Covering the wound with a clean, dry, dressing of any type reduces the chance for infection. Such protection enhances the mobility of the patient and the capability for performing other vital survival functions. In burns about the face and neck, ensure the victim has an open airway. Burns of the face and hands are particularly serious in a survival situation as they interfere with the capability of IP to meet their own needs. Breaking an aloe vera leaf and spreading the internal clear gel

on burns will aid in the healing process. Additionally, soaking certain barks (Willow, Oak, and Maple) in water soothes and protects burns by astringent action. This is a function of the acid content of these barks.

5.5.5.1. Maintenance of Fluids to Recover From Burns

Maintenance of body fluids and salts is essential to recover from burns. Usually, the only way to administer fluids in a survival situation is by mouth; hence, the casualty should ingest sufficient water early before the nausea and vomiting of toxicity intervenes. Consuming the eyes and blood (both cooked) of animals can help restore electrolyte levels if salt tablets are not available. NOTE: The IP may also pack salt in personal survival kits to replace electrolytes (one quarter (1/4) teaspoon per quart of water).

5.5.6. Head Injuries

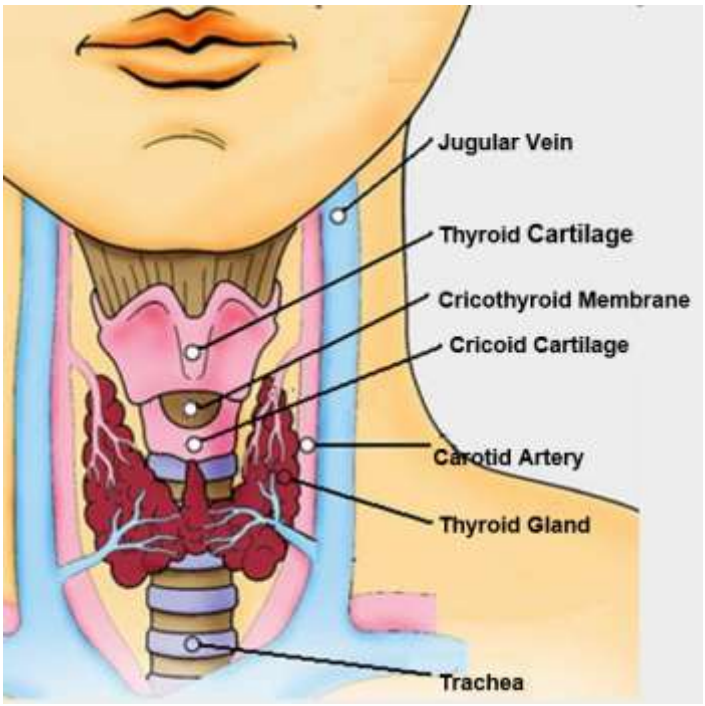
Injuries to the head pose additional problems related to brain damage as well as interfering with breathing and eating. Bleeding is more profuse in the face and head area, but infections have more difficulty in taking hold. This makes it somewhat safer to close such wounds earlier to maintain function. Cricothyroidotomy may be necessary if breathing becomes difficult due to obstruction of the upper airways. In the event of unconsciousness, watch the patient closely and keep him or her still. Even in the face of mild or impending shock, keep the head level or even slightly elevated if there is reason to expect brain damage. Do not give fluids or morphine to unconscious persons.

5.5.6.1. Performing a Cricothyroidotomy

Often, the safest and fastest method to establish a surgical airway is to perform a cricothyroidotomy. In this procedure, the cricothyroid membrane is opened to allow air to pass through into the trachea. The cricothyroid membrane is the soft spot just below the Adam's apple (thyroid cartilage) and just above the cricoid cartilage. In men, this is easily

identified by running your finger down the center of the neck. Just beyond the Adam's apple the cricothyroid membrane is a small, soft indentation about the width of your finger.

5.5.6.2. Locating the Cricothyroid Membrane



The thyroid cartilage (Adam's apple) in women is not usually as prominent as it is in men. It is easier to find their cricothyroid membrane by sliding your finger up the midline of the neck to the first hard bump. That is the cricoid cartilage. Above the cartilage is the cricothyroid membrane (your target), and above the membrane is the thyroid cartilage. Practice identifying the cricothyroid membrane in your own neck, and in other personnel. Then, in an emergency, you will have no difficulty finding it.

5.5.6.3. Tools Needed to Perform a Cricothyroidotomy

To perform an emergency cricothyroidotomy, a sharp instrument, is needed. The following provides examples of instruments that can be used:

- Scalpel
- Pocket knife
- Scissors
- Razor blade
- Sharp edge of a tin can
- Broken glass

5.5.6.4. Speed is Necessary for Performing a Cricothyroidotomy

Ideally, this procedure is performed by well-trained and experienced medical personnel, using sterile technique and instruments designed for this purpose. In other than ideal conditions, speed is more important than sterile technique, special instruments or experience. In an operational setting, if the casualty needs a surgical airway, go ahead and do it, and do it quickly. Some of the most successful airway rescues have been performed by inexperienced, minimally-trained personnel, who have never done this before. There typically won't be time for any anesthetic, but that is not normally an issue since the people on whom you would be doing this procedure will be unconscious. Bleeding usually is not a problem because there are no large blood vessels either in the skin or beneath the skin in this area. Whatever device you use to keep the airway open, try to find some adhesive tape to hold it in place, without obstructing air flow. An emergency cricothyroidotomy can be left in place for up to 72 hours, but after that, it should be replaced by a tracheotomy, placed lower in the trachea by trained surgeons.

5.5.6.4.1. Cricothyroidotomy Procedure

Here is the process for performing this procedure:

1. Identify the cricothyroid membrane with your index finger.

2. Make a transverse incision using any available sharp object, directly over the cricothyroid membrane. The incision should be about an inch long.

3. Once through the skin, feel with your index finger for the soft, compressible cricothyroid membrane.

4. Take your sharp object and push it straight down through the cricothyroid membrane. There will be a distinct "pop" as you open the trachea. Don't worry about going too deep. The far side of the trachea at this point is made of very tough cartilage and it's not too easy to go all the way through it.

5. Once through the membrane, withdraw your sharp instrument and replace it with a hollow tube to keep the airway open.

6. Ideally, this hollow tube would be an endotracheal tube, but any tube-like structure will work fine.

Examples include:

- Ball point pen barrel
- Nail clipper
- Two keys
- One key turned sideways
- Bent paper clip

5.5.7. Abdominal Wounds

Wounds of the abdomen are particularly serious in a survival situation and the IP must seek immediate medical attention. Such wounds, without immediate and adequate surgery, have an extremely high mortality rate and render patients totally unable to care for themselves. If intestines are not extruded through the wound, a secure bandage should be applied to keep this from occurring. If the intestine is extruded, do not replace it due to the almost certain threat of fatal peritonitis. Cover the extruded bowel with a large dressing and keep the dressing wet with any drinkable fluid or if drinkable fluid is unavailable, then urine may be used. The IP should lie on their back and avoid any motions that increase intra-abdominal pressure which might extrude the bowels even more. Keep the IP in an immobile state or move on a litter. "Nature" will eventually take care of the problem either through death, or walling-off of the damaged area.

5.5.8. Chest Injuries

Injuries of the chest are common, painful, and disabling. In the case of a flail chest, ribs broken away from the sternum, apply a bulky dressing and wrap to immobilize. Severe bruises of the chest or fractures of the ribs

may require that the chest be immobilized to prevent large painful movements of the chest wall. If a bandage is required, apply it while the patient deeply exhales. In an isolating event, it may be necessary for IP to wrap their own chest. This is more difficult but can be done by attaching one end of the long bandage (parachute material) to a tree or other fixed object, holding the other end in the hand, and slowly rolling body toward the tree, keeping enough counter pressure on the bandage to ensure a tight fit.

5.5.8.1. Sucking Chest Wounds

These wounds are easily recognized by the sucking noise and appearance of foam or bubbles in the wound. These wounds must be closed immediately before serious respiratory and circulatory complications occur. Ideally, the patient should attempt to exhale while holding the mouth and nose closed (Valsalva) as the wound is closed. This inflates the lungs and reduces the air trapped in the pleural cavity. This procedure may need to be repeated if symptoms return or worsen. Frequently, a taped, airtight dressing is all that is needed, but sometimes it is necessary to suture the wound to make sure the wound is closed.

5.5.9. Eye Injuries

Eye injuries are quite serious in a survival situation due to pain and interference with other survival functions. The techniques for removing foreign bodies and for treating snow blindness are covered in SABC. With more serious eye injuries involving disruption of the contents of the orbit or impaled objects additional steps may be required (note: Do not remove an object that is impaled in the eye unless required for IP survival). A protective covering could be made from a bandage, cup, or similar item to protect the eye from further injury and movement. This will require the unaffected eye be covered and a vertical slit placed in the covering to reduce sympathetic eye movement. As a last resort IP may consider

removing the impaled object and risk losing the eye. The IP may need to tape the lid of the affected eye closed to prevent infection.

5.5.10. Thorns and Splinters

Thorns and splinters are frequently encountered in survival situations. Reduce their danger by wearing gloves and proper footgear. Their prompt removal is quite important to prevent infection. Wounds made by these agents can be quite deep compared to their width which increases chances of infection by those organisms (such as tetanus) which grow best in the absence of oxygen. Removal of splinters is aided by the availability of a sharp instrument (needle or knife), needle nose pliers, or tweezers. Take care to get all of the foreign body out; sometimes it is best to open the wound sufficiently to properly cleanse it and to allow air to enter the wound. When cleaned, treat as any other wound.

5.5.11. Blisters and Abrasions

Care for blisters and abrasions promptly. If redness or pain is noted, the IP should stop what they are currently doing (if at all possible) to find and correct the cause. Frequently, a protective dressing or bandage and/or adhesive will be sufficient to prevent a blister. If a blister occurs, do not remove the top. Apply a sterile (or clean) dressing. Small abrasions should receive attention to prevent infection. Using soap with a mild antiseptic will minimize the infection of small abrasions which may not come to the attention of the IP.

5.5.12. Insect Bites

Bites from insects, leeches, ticks, chiggers, etc., pose several hazards. Many of these organisms transmit diseases, and the bite itself is likely to become infected, especially if it itches and the IP scratches it. The body should be inspected frequently for ticks, leeches, etc., and these should be removed immediately. If appropriate and possible, the IP should avoid infested areas. These parasites can best be removed by applying heat,

irritants, or petroleum jelly to them or their entrance hole to encourage a relaxation of their hold on the host. Then the entire organism may be gently detached from the skin, without leaving parts of the head imbedded. Treat such wounds as any other wound. Applying cold wet dressings will reduce itching, scratching, and swelling.

5.6. Environmental Injury

5.6.1. Dehydration

Dehydration is the lack of adequate body fluids for the body to carry on normal functions at an optimal level (brought on by loss, inadequate intake, or a combination of both). Fluid losses up to five percent are considered mild, up to ten percent are considered moderate, and up to fifteen percent are considered severe. Severe dehydration can result in seizures, permanent brain damage, cardiovascular collapse and death if not treated quickly. To prevent dehydration, drink water and ration your sweat, not your water. Common causes and symptoms of dehydration include, but are not limited to excessive loss of fluid through vomiting or excessive urine, stools or sweating, poor intake of fluids, sunken eyes, dry or sticky mucus membrane in the mouth, lack of skins normal elasticity, decreased or absent urine output, and decreased tears. If an IP shows signs of dehydration, treatment includes oral rehydration which may be sufficient for mild dehydration. Intravenous fluids and hospitalization may be necessary for moderate to severe dehydration.

5.6.2. Heat Related Injuries

5.6.2.1. Preventing Heat Related Injuries

By sweating, breathing, shivering, and shifting the flow of blood between the skin and internal organs, the body can usually keep its temperature within a narrow range in hot or cold weather. However, overexposure to high temperatures can result in heat disorders such as heat exhaustion, heatstroke, and heat cramps. The risk of heat disorders is increased by high humidity, which decreases the cooling effect of sweating,

and by prolonged strenuous exertion, which increases the amount of heat produced by the muscles. Sweat is the body's main system for getting rid of extra heat. When an IP sweats, and the water evaporates from the skin, the heat that evaporates the sweat comes mainly from the skin. As long as blood is flowing properly to the skin, extra heat from the body's core is "pumped" to the skin and removed by sweat evaporation. If a person does not sweat enough, they cannot get rid of extra heat well, and you also can't get rid of heat as well if blood is not flowing to the skin. Dehydration will make it harder for you to cool in two ways: if you are dehydrated you won't sweat as much, and the body will try to keep blood away from the skin in order to keep blood pressure at the right level in the core of your body. Since people lose water when they sweat, they must make up that water to keep from becoming dehydrated. If the air is humid, it is harder for sweat to evaporate -- this means that the body cannot get rid of extra heat when it is muggy as it can when it is relatively dry. The best fluid to drink when a person is sweating is water. Using common sense is the best way to prevent heat-related illnesses. Stay well hydrated; to make sure that the body can get rid of extra heat, and be sensible about exertion. It's also important to be sensible about how much a person exerts themselves in hot weather. The hotter and more humid it is, the harder it will be for a person (IP) to get rid of excess heat. Clothing also makes a difference. Use clothing to protect from the sun/heat and aid in keeping the body cool. Many layers of clothing may hide heavy sweating, masking symptoms of heat disorders.

5.6.2.2. Heat Cramps

Heat cramps are severe muscle spasms resulting from heavy sweating during exertion in extreme heat. Heat cramps are caused by the excessive loss of fluids and salts (electrolytes)--including sodium, potassium, and magnesium--resulting from heavy sweating. Heat cramps often begin suddenly in the hands, calves, or feet. They are often painful and disabling. The muscles become hard, tense, and difficult to relax. Heat

cramps can be prevented or treated by drinking beverages or eating foods that contain sodium (salt), potassium, and magnesium such as fiddlehead ferns, crickets nuts (acorn and pine work best), and fruits.

5.6.2.3. Heat Exhaustion

Heat exhaustion is a condition resulting from exposure to heat for many hours, in which excessive loss of fluids from heavy sweating leads to fatigue, low blood pressure, and sometimes collapse. Exposure to high temperatures can cause the loss of too much fluid through sweating, particularly during hard physical labor or exercise. Salts (electrolytes) are lost with the fluids, disturbing the circulation and the brain's functioning. As a result, heat exhaustion may develop. The major symptoms of heat exhaustion are increased fatigue, weakness, anxiety, and drenching sweats. A person may feel faint when standing still because blood collects (pools) in blood vessels of the legs, which are dilated by the heat. Also, the heartbeat becomes slow and weak, the skin becomes cold, pale, and clammy, and the IP may become confused. The loss of fluids reduces the volume of blood, lowers blood pressure, and may cause the person to collapse or faint. Usually, heat exhaustion can be diagnosed on the basis of the symptoms. The main treatment is replacing fluids (rehydration) and salt. Lying flat or with the head lower than the rest of the body and sipping cool, slightly salty beverages every few minutes are generally all that is needed. Moving to a cool environment helps. After rehydration, a person often recovers rapidly and fully. If blood pressure remains low and the pulse remains slow for more than an hour despite this treatment, another condition should be suspected, diagnosed and treated.

5.6.2.4. Heat Stroke

Heat stroke is a life-threatening condition resulting from long, extreme exposure to heat, in which a person cannot sweat enough to lower body temperature. This condition often develops rapidly and requires immediate intensive treatment. If a person reaches this state, body

temperature may rise to dangerously high levels, causing heatstroke. Heatstroke may develop rapidly and is not always preceded by warning signs such as a headache, vertigo (a whirling sensation), or fatigue. If a person has suffered a heat stroke, sweating usually but not always decreases. The skin is hot, flushed, and unusually dry. The heart rate increases and may quickly reach 160 to 180 beats per minute, in contrast to the normal rate of 60 to 100 beats per minute. The breathing rate usually increases, but blood pressure rarely changes. Body temperature (which should be measured rectally), rises rapidly to 104° F. to 106° F., causing a feeling of burning up. A person may become disoriented and confused and can quickly lose consciousness or have convulsions. Heatstroke can cause permanent damage or death if not treated immediately. A temperature of 106° F is very serious; a temperature just one degree higher is often fatal. Permanent damage to internal organs, such as the brain, can occur quickly, often resulting in death. Heatstroke is an emergency, and lifesaving measures should be started immediately. A person who can't be taken to a hospital quickly should be wrapped in wet bedding or clothing, immersed in a lake, stream, pond, or river. Pay attention to their body temperature (through their signs and symptoms) to avoid overcooling. After severe heatstroke, rest is advised for a few days to avoid other possible complications to include heart failure. Body temperature may fluctuate abnormally for weeks causing the potential for other environmental injuries.

5.6.3. Cold Related Injuries

5.6.3.1. Preventing Cold Related Injuries

The four main factors that make an IP more susceptible to localized cold injury are inadequate insulation from cold or wind, restricted circulation, fatigue, and poor nutrition.

5.6.3.1.1. Inadequate Insulation from Cold or Wind

The easiest and most effective way to prevent the body from losing heat is the proper wear of clothing. Keep the head and ears covered. IP will lose as much as 50 percent of their total body heat from an unprotected head at 50 F. When exerting the body, prevent perspiration by clothing at the neck and wrists and loosening it at the waist. If the body is still warm, comfort can be obtained by removing the inner layers of clothing, one layer at a time. The outer protective layer should be worn unless it is too bulky and a factor in causing the body to overheat. When work stops, the individual should put the clothing on again to prevent chilling. Change and dry wet clothing throughout the day.

5.6.3.1.2. Restricting Circulation

Avoid restricting the circulation. Clothing should not be worn so tight that it restricts the flow of blood that distributes the body heat and helps prevent cold injuries.

5.6.3.1.3. Fatigue

When a person is severely fatigued his body generates less heat. This is why it is extremely important that when in cold environment to take more rest breaks and drink plenty of water during these breaks. Once the body is overworked it is very difficult to gain the strength back. IP should take their time accomplishing tasks (like building shelters) and stay hydrated.

5.6.3.1.4. Poor Nutrition

The amount and type of food IPs eat in cold environment directly affects the amount of heat generated by the body. A large portion of an IPs diet should consist of fats. The energy contained in fats is more slowly released that the energy in carbohydrates. Because of this, it is a longer lasting form of energy.

5.6.3.2. Hypothermia

Literally, hypothermia means “low temperature” and is diagnosed when the inner (core) temperature of the body falls below 95 F (35 C). Generalized, progressive cooling of the body results in hypothermia. It can develop quickly. The body can usually tolerate a drop of a few degrees of internal body temperature. Below 90 F, the body loses its ability to regulate its temperature and to generate body heat. Progressive loss of body heat then begins. Hypothermia occurs when the core temperature is between 90 and 95 F. Hypothermia is a silent killer of those who are not prepared to face a cool, wet day. It happens when your body is not able to make enough heat to replace the warmth you lose to the environment around you.

5.6.3.2.1. Mild Hypothermia

Even mild degrees of hypothermia can have serious consequences and complications. Involuntary shivering begins in response to a drop in the body core temperature. The patient is usually alert and shivering. Shivering is an attempt to generate more heat through muscular activity. Shivering usually stops once the core temperature drops below 90º - 92ºF (30º - 31ºC). That is an indication of extreme danger. Warming the skin of someone with hypothermia may stop the shivering, even though the core temperature has not changed.

5.6.3.2.2. Additional Symptoms of Hypothermia

As the IP begins to sink farther into hypothermia, they will have the additional symptoms of clumsiness and mental confusion (i.e., slowing of thought and action). If left untreated they become unconscious. Eventually all cardio-respiratory activity may cease and the patient may appear dead. Never assume a patient that is cold and without a pulse is dead.

5.6.3.2.3. Proper Emergency Measures

Patients can survive even after severe hypothermia if you carry out proper emergency measures. First, prevent further body heat loss, and then

try to warm the victim. If outdoors, place the victim out of the wind in the best shelter possible. Change the victim into dry clothes, if possible, and place on top of as much insulation as possible to keep the victim off the ground. Placing a hypothermic person in a cold sleeping bag is not sufficient. The bag should be pre-warmed by another person, if possible, to transfer a maximum amount of body heat to the bag. If the bag is large enough, it can be a lifesaving step to put both people in together (two non-hypothermic people to one hypothermic person is the best ratio). If unconscious, place the victim on his/her side to ensure an open air passage. If the victim is conscious, administer warm fluids such as tea or broth. Sweets should be given if the victim is able to eat; they are quickly transformed into heat and energy. Never use alcoholic beverages as a way to re-warm a hypothermic individual.

5.6.3.3. Frostbite

Frostbite is literally the freezing of body tissue; usually skin. Fingers, toes, ears, and the nose are the area's most vulnerable to frostbite. There are two degrees of frostbite which an IP should be concerned about. The first is Frostnip, which usually affects skin on the face, ears, or fingertips. Frostnip may cause tingling, numbness, and/or blue-white skin color for a short time (with normal feeling and color returning quickly when re-warmed). No permanent tissue damage occurs. The second is deep frostbite, in which the skin and underlying tissue freezes, looking pale or blue and feels cold, numb, and stiff or rubbery to the touch. Permanent damage is possible, depending on how long and how deeply the tissue is frozen.

5.6.3.3.1. Symptoms of Frostbite

Frostbite is caused by either prolonged exposure to cold temperatures or shorter exposure to very cold temperatures. Many people with frostnip or frostbite experience numbness. A "pins and needles" sensation, severe pain, itching, and burning are all common when the affected area is warmed and blood starts flowing again. Skin may look

white, grayish-yellow, or even black with severe frostbite, and it may feel hard, waxy, and numb. Blistering is also common.

5.6.3.3.2. Treating Frostbite

Keep the affected part elevated in order to reduce swelling. Move to a warm area to prevent further heat loss. NOTE: Many people with frostbite may be experiencing hypothermia. Saving their lives is more important than preserving a finger or foot. Remove all constrictive jewelry and clothes because they may further block blood flow. Give the person warm, nonalcoholic, noncaffeinated fluids to drink.

5.6.3.3.3. Frostnip

In cases of frostnip re-warm the IP by putting the injured area against warm areas of the body to re-warm (i.e., frostnip fingers in the armpit). With frostbite, never re-warm an affected area if there is any chance it may freeze again. This thaw-refreeze cycle is very harmful and leads to disastrous results. Also, avoid a gradual thaw. The most effective method is to re-warm the area quickly. Therefore, keep the injured part away from sources of heat until a proper re-warming can take place.

5.6.3.3.4. What to do Once the Area is Re-Warmed

Once the area is re-warmed, apply a dry, sterile bandage, place cotton between any involved fingers or toes (to prevent rubbing). Do not rub the frozen area with snow (or anything else, for that matter). The friction created by this technique will only cause further tissue damage. Above all, keep in mind that the final amount of tissue destruction is proportional to the time it remains frozen, not to the absolute temperature to which it was exposed. Therefore, the act of re-warming and avoiding refreezing are critical. After re-warming, treatment of the affected parts includes leaving blisters intact, elevation of the affected parts, and using any Ibuprofen as indicated.

5.6.3.4. Trench Foot or Immersion Foot

Trench foot (immersion foot) is a cold injury that occurs gradually over several days of exposure to cold, but not freezing, temperatures. The name comes from World War I troops who developed symptoms after standing in cold, wet trenches. Symptoms of trench foot include red wrinkling skin that turns pale, swelling, numbness or burning pain, leg cramps, slow or absent pulse in the foot, and the development of blisters or ulcers after two to seven days, but no actual freezing of the skin. For immersion foot, remove wet shoes, boots, and socks. Re-warm the affected areas (do not use heat from a fire to dry feet), relieving pain, protecting it from further cold exposure, and preventing problems such as infection or dead skin (gangrene).

5.6.4. Bites and Stings

5.6.4.1. Prevention

Prevention is the key to treatment. Follow these simple rules to reduce the chance of accidental bites and stings:

- Don't put your hand into dark places such as rock crevices, heavy brush, or hollow logs without first investigating. When crossing over debris, look to see what is on the other side.
- Look where you are stepping (especially in heavy brush or tall grass).
- Use extra caution when walking at night.
- Don't pick up any insect if you are not sure if it is venomous.
- Don't pick up freshly killed snakes without severing the head (dead snakes can still bite).
- Check all clothing and bedding before using.

5.6.4.2. Snakebites

No single physical characteristic distinguishes a poisonous snake from a harmless one except the presence of poison fangs and glands. A determination of the presence of fangs and glands safely can only be made when the snake is dead. When in doubt, treat a snake bite as if it poisonous.

5.6.4.2.1. Hemotoxic Venom Types

Some examples of these types of snakes are the copperhead, common adder, puff adder, sand viper, bushmaster, cottonmouth, and eastern/western diamondback rattlesnake. This type of venom affects the circulatory system, destroying blood cells, damaging skin tissue and causing internal hemorrhaging. Local effects include strong pain, swelling and necrosis at the site. Pain is much like that of a severe burn. Systemic effects include hemorrhaging, internal organ breakdown and destroying of blood cells. Signs and symptoms of a hemotoxic snakebite are: fang marks (can be one or more), purplish discoloration around site (developing within two to three hours after bite), numbness and possible blistering around the bite, nausea/vomiting, rapid heartbeat, low blood pressure, weakness and fainting, headache, dimmed vision, convulsions, excessive sweating, fever with chills, muscular twitching, and the entire extremity generally swells within eight to thirty-six hours.

5.6.4.2.2. Neurotoxic Venom Types

Some examples of these types of snakes are the coral snake, death adder, common cobra, Egyptian cobra, king cobra, green mamba, sea snakes, and krait. This type of venom affects the nervous system making the victim unable to breath. Local effects include little to no pain or swelling and possible necrosis. Systemic effects include respiratory collapse. Signs and symptoms of a neurotoxic snakebite are: fang marks or small scratches such (as in the case of a coral snake), little to no pain or swelling (if pain does occur it is confined to the bite area), blurred vision, drooping eyelids, slurred speech, increased salivation/sweating, drowsiness, difficulty breathing, paralysis, convulsions, nausea, and coma. Neurotoxic venom effects might not develop for one to eight hours after the bite.

5.6.4.2.3. Neurotoxic and Hemotoxic Venom Types

The venom of the Gabon viper, rhinoceros viper, tropical rattlesnake, and Mojave rattlesnake are both strongly neurotoxic and hemotoxic.

5.6.4.2.4. Snake Bite Treatment

- What to do if bitten by a venomous snake. If bitten by a venomous snake, it is important to do the following:
  - Remain calm (this is critical to reduce the spread of venom throughout the body).
  - Keep the extremity at heart level.
  - Disinfect the puncture wound, immobilize the extremity (be aware of swelling that can complicate splinting).
  - Limit movement.
  - Remove any restrictive items such as watches, rings, and boots.
  - Treat for shock.
  - Use an extractor kit if available.
- What NOT to do if bitten by a venomous snake. If bitten by a venomous snake, it is important not to:
  - Make incisions across each fang bite.
  - Apply mouth suction. Use ice on the bite.
  - Place a tourniquet on the bitten extremity,
  - Kill the snake for identification.

[The **Asclepius Snakebite Foundation** (https://www.snakebitefoundation.org/) provides detailed information on dealing with snake bites.]

5.6.4.3. Spider Bites and Scorpion Stings

Signs and symptoms of a black widow and funnel web spider bites are a pinprick sensation at the site of the bite, becoming a dull ache within thirty to forty minutes. Expect pain and spasms in the shoulder, back, chest, and abdominal muscles within thirty minutes to three hours after the bite. The IP may develop a rigid, board-like abdomen. They will usually

become nauseous (with vomiting), restlessness, anxious, and start running a fever and may also develop a rash.

5.6.4.3.1. Brown Recluse Spider

Signs and symptoms of a brown recluse spider bite are mild transitory stinging at the time of the bite, but there is little associated early pain. After two to eight hours, pain will occur varying from mild to severe. Several days later, an ulcer may form at the site of the bite. The bite may also produce serious systemic symptoms including fever, chills, weakness vomiting, joint pain, and a spotty skin eruption, all occurring within 24-48 hours after the venom injection. Scorpion bites will usually involve a sharp pain at the sting site. There will be swelling and discoloration at the sting site, which spreads gradually. Other signs and symptoms may include increased salivation, restlessness, poor coordination, seizures, incontinence, and nausea/ vomiting.

- General treatment for bites and stings is simple. The individual should remain calm. Disinfect the puncture site and in the case of a black widow, funnel web spider, and scorpion bites apply a cold compress to the puncture site if possible. Guard against infection and treat symptomatically and for shock.

5.6.5. Contact Skin (Dermatitis) Irritation

Common plants that cause skin irritation are poison ivy, poison oak, and poison sumac, but other plants can cause stinging, irritation, or an allergic reaction. Irritant contact, the most common type, involves inflammation resulting from contact with acids or alkaline materials. The reaction may resemble a burn. Allergic contact is caused by exposure to a substance or material to which you have become extra sensitive or allergic. The allergic reaction is often delayed, with the rash appearing 24 - 48 hours after exposure. The skin inflammation varies from mild irritation and redness to open sores, depending on the type of irritant, the body part affected, and your sensitivity.

5.6.5.1. Preventing Skin Irritation

To prevent skin irritation, avoid contact. Use protective gloves and keep sleeves rolled down with other barriers if contact with substances is likely or unavoidable. Wash skin surfaces thoroughly after contact with substances. Avoid over treating skin disorders. Symptoms of skin irritation include itching (pruritus) of the skin in exposed areas, skin redness or inflammation in the exposed area, tenderness of the skin in the exposed area, localized swelling of the skin, warmth of the exposed area, or skin lesions or rash at the site of exposure. Skin lesions which may consist of redness, rash, papules (pimple-like), vesicles, or bullae (blisters) may involve oozing, draining, or crusting and may become scaly, raw or thickened.

5.6.5.2. Initial Treatment

Initial treatment includes thorough washing with lots of water to remove any trace of the irritant that may remain on the skin. You should avoid further exposure to known irritants or allergens. In some cases, the best treatment is to do nothing to the area. Use of tannic acid "tea" poured on to the affected area may reduce some of the symptoms. Jewelweed is known for its ability to counter poison ivy and skin rashes. Jewelweed has been used as a poultice and salve. It is also used for bruises, burns, cuts, eczema, insect bites, sores, sprains, warts, and ringworm. Jewelweed is a smooth annual plant that can grow three to five feet. Trumpet-like shaped flowers hang from the plant in yellow or orange flowers with dark red dots. The Spotted Jewelweed variety is most commonly used for rashes although the Pale Jewelweed may also have medicinal properties.

5.6.5.3. Jewelweed

Jewelweed blooms May through October in the eastern part of North America from Southern Canada to the northern part of Florida. It is found most often in moist woods growing on the edges of creek beds. Slice the stem of the jewelweed plant, and then rub its juicy inside on exposed parts.

This will promptly ease irritation and usually prevents breakout for most people.

5.7. Marine Animals that Bite

5.7.1. Sharks

Sharks live in almost all oceans, seas, and in river mouths. Sharks vary greatly in size, however, there is no correlation between the size of a shark and the risk of attack.

5.7.1.1. Behavior of Hungry Sharks

Hungry sharks sometimes follow fish up to the surface and into shallow waters along the shore. When sharks explore such waters, they are more likely to come in contact with people. Sharks seem to feed most actively during the night and particularly at dusk and dawn. After dark, they show an increased tendency to move toward the surface and into shore waters. Evidence indicates that a shark first locates food by smell or sound. Such things as garbage, body wastes, and blood probably stimulate the desire for food. A shark is also attracted by weak fluttery movements similar to those of a wounded fish. While a shark will investigate any large floating object as a possible food source, it probably will not attack a human unless it is hungry. Often the shark will swim away after investigating. At other times, it may approach and circle the object once or twice, or it may swim close and nudge the object with its snout. People on rafts are relatively safe unless they dangle their hands, arms, feet or legs in the water.

5.7.1.2. Preventing Shark Attack

Individuals on or in the water should keep a sharp lookout for sharks. Clothing and shoes should be worn. If sharks have been noticed, IP must be especially careful of the methods in which body wastes are eliminated and must avoid dumping blood and garbage. Vomiting, when it cannot be prevented should be done into a container or hand and thrown

down current as far away as possible. The sea anchor can also be pulled from the water for a short period of time to move away.

5.7.1.2.1. What to do if Threatened by a Shark

If a group in the water is threatened or attacked by a shark, they should bunch together, form a tight circle, and face outward so an approaching shark can be seen. Ward off an attack by kicking or stiff-arming the shark. Striking with the bare hand should be used only as a last resort. Instead, survivors should use a hard and heavy object. During World War II the USS Indianapolis with 1,196 personnel on board was torpedoed by a Japanese submarine. Approximately 900 officers and sailors made it into the water alive before the ship sank twelve minutes later. Shark attacks began with sunrise on the first day and continued until the men were physically removed from the water. The survivors were not rescued until five days later by US Navy Sea Planes. When the survivors were recovered, only 317 remained alive.

5.7.1.3. Staying Quiet when Faced with Threatened by a Shark

Individuals should stay as quiet as possible and float to save energy and swim only if required to get to raft, land, or recovery.

- Do not swim directly away from the shark, but face the shark and swim to one side, with strong rhythmic movements.
- If a shark threatens to attack or damage a raft, jabbing the snout or gills with an oar or other hard object may discourage it. Check for sharks around and under the raft before going into the water.

5.7.2. Barracuda

There are approximately 20 species of barracuda. Some are more feared in certain parts of the world than are sharks. If IP come down in any tropical or subtropical sea, they may encounter this fish. Barracuda are attracted by anything which enters the water and they seem to be particularly curious about bright objects. Accordingly, IP should avoid

dangling dog tags or other shiny pieces of equipment in the water. Dark colored clothing is also best to wear in the water if no raft is available.

5.7.3. Moray Eels

If attacked by some species of moray eel, the IP may have to cut off their heads since some eels will retain their sharp crushing grip until dead. The knife used to do this should be very sharp since their skin is tough and difficult to cut. Their bodies are very slippery and hard to hold. An IP is most likely to come into contact with a moray eel when poking into holes and crevices around or under coral reefs. Use caution in these areas.

5.8. Marine Animals that Sting

Poisonous and Venomous Marine Animals (invertebrates). There are many marine animals that have no backbone and can inflict injuries by stinging.

5.8.1. Coelenterates

This group includes jellyfish, hydroids, sea anemones, and corals. Coelenterates are all simple, many-celled organisms. They all possess tentacles equipped with stinging cells or nematocysts in addition to other technical characteristics.

5.8.1.1. Corals

IP should treat coral cuts by thoroughly cleaning the wound and removing any coral particles. Some coral cuts have been helped by painting them with an antiseptic solution of tincture of iodine.

5.8.1.2. Sea Anemones

The sea anemone is one of the most plentiful marine creatures, with well over 1,000 species. Most of the stinging cells of the sea anemones are located on the outer ring of the tentacles.

5.8.1.3. Venom Apparatus of Coelenterates

All of the coelenterates have stinging cells or nematocysts located on the tentacles. Each of these cells is like a capsule. If the IP comes into contact with the capsule, part of it springs open and a very sharp, extremely small "thread"-type tube appears. The sharp tip of the tube penetrates the skin and the venom is injected. When coming in contact with the tentacles of any coelenterate, the IP brushes up against literally thousands of these small-stinging organs.

5.8.1.3.1. Symptoms of Stings

The symptoms produced by coelenterate stings will vary according to species, where the sting is located, and the physical condition of the IP. In general, though, the sting caused by hydroids and hydroid corals is primarily skin irritations of a local nature. Stings of the Portuguese Man-of-War may be very painful. True corals and sea anemones produce a similar reaction. Some of the sting of these organisms may be hardly noticeable, while others may cause death in three to eight minutes. Symptoms common to all of these may vary from an immediate mild prickly or stinging sensation, like that of touching a nettle, to a burning, throbbing, shooting-type pain which may cause the survivor to become unconscious. In some cases, the pain may be localized, while in others, it may spread to the groin, armpits, or abdomen. The area in which contact was made will usually become red, followed by severe inflammation, rash, swelling, blistering, skin hemorrhages, and sometimes ulceration. In severe cases of reaction, in addition to shock, the person may experience one or more of the following: muscular cramps, lack of touch and temperature sensations, nausea, vomiting, backache, loss of speech, constriction of the throat, frothing at the mouth, delirium, paralysis, convulsions, and death. Since some of these traits appear quickly, the victim should try to get out of the water if at all possible to avoid drowning.

5.8.1.3.2. Jellyfish

One of the most deadly jellyfish is the sea wasp (an uncommon creature which is found in tropical southern Pacific waters). This animal can cause death anywhere from 30 seconds to three hours after contact. Most deaths take place within 15 minutes. The pain is said to be excruciating. The sea wasp can be recognized by the long tentacles that hang down from the four corners of its square shaped body.

5.8.1.3.3. Relieve Pain

Tentacles or other matter on the skin should be removed immediately. This is important because as long as this matter is on the skin, additional stinging cells may be discharged. Use clothing, seaweed, or any other available material to remove the matter. DO NOT rub the wound with anything, especially sand, as this may cause the stinging cells to be activated. DO NOT suck the wound.

5.8.1.3.4. Alleviating the Effects of Poison

Alleviate poison effects. The following local remedies have been used in various parts of the world with varying degrees of success: papain (protein destroying enzyme) from the Papaya plant, soap, diluted ammonia solution or urine, (Urine - with its ammonia content - may be the only source of relief available to an IP).

5.8.1.3.5. The Potential need to Perform CPR

Artificial respiration and cardiopulmonary resuscitation may be required. There are no known specific antidotes for most coelenterate stings. However, there is one anti venom for the sea wasp which is papain, a proteolysis enzyme in the juice of the green fruit of the papaya. Even if the IP is in an area where the anti-venom is available, it may be too late to obtain and use it. The venom acts so quickly that medical help is often too late.

5.9. Marine Animals that Puncture

5.9.1. Mollusks

Octopus, squid, and univalve shellfish are in this category. Mollusks make up the largest single group of biotoxic marine invertebrates of direct importance to the IP. Stinging or venomous mollusks which concern the IP fall mainly into two categories:

5.9.1.1. Gastropoda (Stomach Footers)

These in general are un-segmented invertebrates. Sometimes their soft bodies will secrete a calcareous shell. They have a muscular foot which serves a variety of functions. Some breathe by means of a type of siphon while others use gills. Some types have jaws. In those that don't have jaws, food is obtained by a rasp-like device called a radula. In the cone shells, the radula is a barb or tooth (a hollow, needle-like structure).

- These univalves include marine snails, slugs, as well as land and freshwater snails. It is estimated that there are over 33,000 living species of gastropods. However, only members of the genus conus are of concern to the IP. Of these cone shells, there are over 400 species, but they will only be discussed in general terms with the emphasis placed on the more dangerous species. With few exceptions, these attractive shellfish are located in tropical or subtropical areas. All of these shells have a very highly developed venom apparatus designed for vertebrate or invertebrate creatures and are found from shallow tidal areas to depths of many hundreds of feet. The area in which the IP may come into contact with these shellfish is in coral reefs and sandy or rubble habitat. All cone-shaped shells in these areas should be avoided. Cone shells are usually nocturnal. During the daytime, they burrow and hide in the sand, rocks, or coral; they feed at night on worms, octopus, other gastropods, and small fish. Several of these shells have caused death in humans. The venom apparatus lies within a body cavity of the animal and the animal is capable of thrusting and injecting the poison via the barb into the flesh of the victim. The cone shell is able to inflict its wound only when the head of the animal is out of the shell.

- The sting made by a cone shell is a puncture-type wound. The area around the wound may exhibit one or more of the following: turning blue, swelling, numbness, stinging, or burning sensation. The amount of pain will vary from person to person. Some say the pain is like a bee sting, while others find it unbearable. The numbness and tingling sensations around the site of the wound may spread rapidly, involving the whole body, especially around the lips and mouth. Complete general muscle paralysis may occur. Coma may ensue and death is usually the result of cardiac failure.
- The pain comes from the injection of venom, slime, and other irritating foreign matter into the wound site. The treatment is primarily symptomatic because there is no specific treatment. Applying hot towels or soaking the affected area in hot water may relieve some of the pain. Artificial respiration may be needed.
- This group includes the nautili, squid, cuttlefish, and octopus. Since the octopus is the marine animal most likely to be encountered by an IP, it is the only one that will be discussed. The head of this animal is large and contains well-developed eyes. The mouth is surrounded by eight legs equipped with many suckers. It can move rapidly by expelling water from its body cavity, though it usually glides or creeps over the bottom. Most octopuses live in water ranging from very shallow to depths of over 100 fathoms. All are carnivorous and feed on crabs, and other mollusks. Octopuses like to hide in holes or underwater caves-avoid these areas. The small blue ring octopus is usually only three or four inches across although some may be slightly larger. Found throughout the Indo-Pacific area, this octopus is not aggressive toward humans. Because its venomous bite is so dangerous, it should not be handled at any time. When this animal is disturbed the intensity of its blue rings varies rapidly on a light yellow or cream to brown background.
- The sharp parrot-like beak of the octopus makes two small puncture wounds into which a toxic solution or venom is injected. Pain is

usually felt immediately in the form of a burning, itching, or stinging sensation. Bleeding from the wound is usually very profuse which may indicate the venom contains an anticoagulant. In some cases, the area around the wound and the entire appendage, may swell, turn red, and feel hot.

5.9.1.1.1. Treatment

Treat for shock, stop bleeding, clean the wound area since more venomous saliva could be in the area, and treat symptoms as they arise. There is no known cure for the venom of the Blue Ringed octopus.

5.9.2. Echinoderms

Sea cucumbers, starfish, and sea urchins are members of this group. Sea urchins comprise the most dangerous type of echinoderms. Sea urchins have rounded, egg-shaped, or flattened bodies. They have hard shells that carry spines. In some species, the spines are venomous and present a hazard if stepped on or handled. Some urchins are nocturnal. They all tend to be omnivorous, eating algae, mollusks, and other small organisms. They can be found in tidal pools or in areas of great depth in many parts of the world. Sea urchins are not good food sources. At certain times of the year, certain species can be poisonous.

5.9.2.1. Complications

The needle-sharp points of sea urchin spines are able to penetrate the flesh easily. These spines are also very brittle and tend to break off while still attached to the wound and are very difficult to withdraw. Stepping on one of these spines produces an immediate and very intense burning sensation. The area of pain will also swell, turn red, and ache. Numbness and muscular paralysis, swelling of the face, and a change in the pulse have also been reported. Secondary infection usually sets in. While some deaths have been reported, other victims have experienced loss of speech,

respiratory distress, and paralysis. The paralysis will last from 15 minutes to six hours.

5.9.2.2. Treatment

Spines that are detached from the animal will continue to secrete venom into the wound. The spines of some species will be easily dislodged whereas others must be surgically removed. There will also be some discoloration due to a dye the animal secretes -- do not be disturbed by this. Some experts say to apply grease to allow the spines to be scraped off. Others advise leaving them alone since some of the spines will dissolve in the wound within 24 to 48 hours. Still other experts say to apply citrus juice, if available, or soak the area in vinegar several times a day to dissolve them.

5.9.2.3. Prevention

No sea urchin should be handled. The spines can penetrate leather and canvas with ease. 5.9.3. Venomous Spine Fish (Fish That Sting) Types of fish in this group are Stingrays (includes whip rays, bat rays, butterfly rays, cow-nosed rays, and round stingrays), Rat fish, Catfish, Scorpion fish, Surgeon fish and Star Gazers. NOTE: For all wounds from these types of fish, aid should be directed to three areas: alleviating the pain of the sting, trying to halt the effects of the venom, and preventing infection.

5.9.3.1. Pain Inflicted by Fish That Sting

Certain types of these fish have up to 18 spines. The pain caused by the sting of one of these spines is so great in some species that the victim may scream and thrash about wildly. In one case, a man stung in the face by a weever fish begged for bystanders to shoot him, even after two shots of morphine sulfate. Many of these fish are bottom dwellers who will not move out of the way when being approached by humans. Instead, they will lie quietly camouflaged, put up their spines, and simply wait for the

unlucky individual to step on them. Other people have been injured by them while trying to remove them from fishing nets and fishing lines.

5.9.3.2. How to Remove the Barb of a Stingray

In cases where humans are stung by stingrays, the barbs on the sharp spines may cause severe lacerations as well as introduce poison. These wounds should be irrigated without delay. Puncture wounds from the fish are small and make removal of the poison a difficult process. It may be necessary to remove the barb. A procedure which is fairly successful is to make a small cut across the wound (debride) and then apply suction. Even if no incision is made, suction should be tried since it is important to remove as much of the venom as possible. The more poison removed, the better. Morphine does not relieve the pain of some of these venoms.

5.9.3.3. Treating the Sting Injury

Most doctors agree that the injured part should be soaked in hot water from 30 minutes to one hour. The temperature of the water should be as hot as the patient can stand without injury. If the wound is on the face or body, hot moist cloth compresses can be used. The use of heat in this manner may weaken the effect of the poison in some cases. After soaking the wound, clean it again, if necessary. Cover the area of the wound with antiseptic and a clean sterile dressing. If antibiotics are available, it may be advisable to use them to help prevent infection. Treatment for shock is wise. Artificial respiration may be needed since different types of venom may cause cardiac failure, convulsions, or respiratory distress.

5.9.3.4. Treatment

As soon as any symptoms arise, vomiting should be induced by administering warm saltwater or the whites of eggs. If these procedures don't work, try sticking a finger down the person's throat. A laxative should also be given to the victim if one is available. The victim may have to be protected from injury during convulsions. If the victim complains of

severe itching, cool showers may give some relief. Treat any other symptoms as they arise.

5.10. Medical Plants for SERE Scenarios

The Encyclopedia of Herbal Medicine (Chevallier, 2000) suggests that over the course of time, some 70,000 plant species have been used in the practice of medicine; the Chinese Pharmacopeia lists over 5,700 remedies that are mostly of plant origins. With the sheer volume of plants, the topic of herbal medicine can easily be overwhelming. Never the less, by applying a few guidelines, the information can benefit the potential IP. Plants to be used in SERE must be common, easily identified, readily obtainable and they should not have poisonous mimics in nature. They must be safe to use, have minimal side effects, and a high therapeutic index. Finally, the potential IP must know how to prepare and use medicinal plants or they have no value. The potential IP can learn medicinal plants that are available in most regions of the world (global in nature) and/or those medicinal plants native to the deployment location. Plants a potential IP learns should also treat symptoms of conditions (illnesses, wounds, and/or injuries) that are common for the most expected types of isolating event. The following list obtained from The Encyclopedia of Herbal Medicine (Chevalier, 2000), contains examples of plants that meet the criteria noted above.

5.10.1. Aloe Vera

Aloe Vera gel directly extracted from the leaf can be applied to treat burns, eczema, and other skin conditions.

5.10.2. Peppers

Cayenne Chili and other pepper species contain capsaicin. Oil infused with peppers can be massaged into the skin to relieve aching muscles and joints. Peppers have expectorant properties that help with congestion; eating them can also help eliminate intestinal parasites.

5.10.3. Common Plantain

Common Plantain has several medicinal uses. Leaves can be macerated and applied to the skin to stop bleeding or promote wound healing. As an infusion (tea) it can aid in the treatment of diarrhea and gastritis. Plantain is also and expectorant/decongestant similar to Mullein.

5.10.4. Dandelion

Dandelion is a great source of vitamins and all parts are edible. Dandelion has diuretic and detoxifying properties. Decoctions are a liquid medicine made from an extract of water-soluble substances, usually with the aid of boiling water. Herbal remedies or decoctions can be made from the root of the Dandelion to treat several skin conditions, arthritis, and constipation.

5.10.5. Dog Rose

Dog Rose, besides being vitamin rich, tea made from rose hips is used to treat diarrhea.

5.10.6. Garlic

Garlic also treats multiple ailments. The juice from the bulbs can be mixed with water and used as an antiseptic to treat skin infections. Garlic cloves can be eaten to treat coughs and bronchitis.

5.10.7. Mullein Leaves

Mullein leaves and flowers make a good expectorant for treating coughs and congestion when infused into a tea. The Aloe-like emollient in the leaves can be applied directly to skin wounds.

5.10.8. Onions

Onions have diuretic, expectorant, anti-inflammatory, analgesic, antibiotic, and anti-rheumatic properties. Onions can be eaten or the juice applied topically; they also prevent oral infections and fight tooth decay.

5.10.9. White Willow

White Willow and Black Willow barks contain salicylic acid, a substance that chemically resembles aspirin. It temporarily relieves headache, stomachache, and other body pain. Salicin is metabolized into salicylic acid in the human body, which is a precursor of aspirin. White Willow has anti-inflammatory, analgesic, anti-pyretic, anti-rheumatic, and astringent properties; it can be prepared into a decoction.

5.10.10. Yarrow

Yarrow made into a poultice can help treat wounds. In tea form, Yarrow helps with upper respiratory infections, indigestion, and to regulate menses. All parts of the plant can be used.

5.10.11. Sweet Gum

Sweet Gum was traditionally used as incense and medicine well before settlers came to the Americas. The tree produces a light brown sap from the inner bark and wood, which is similar in color to honey from the inner bark and wood. Water from boiled Sweet Gum leaves can also be used as antiseptic for wounds.

5.10.12. Balsam

Balsam tree's boiled down sap is often used to cure dysentery, diarrhea diphtheria, and pulmonic catarrhs. When the balsam is combined with tallow or lard it becomes highly effective at curing skin problems. This mixture has been used to cure skin problems like ringworm. The medicinal properties of the balsam come from extractives found inside it. Cinnamyl cinnamate, ethyl, benzyl, and other forms of cinnamic acid are some of the extractives found in the balsam.

5.10.13. Preparing Plants for Medical Use

As previously stated, identifying plants with medicinal properties is only part of the equation. The potential IP must have some basic

instruction on preparation and use. The following is a list of general guidelines for making herbal remedies (Chevallier, 2000).

5.10.13.1. Herbal Teas

Infusions (herbal teas) are made by steeping dried or fresh herbs (about one to two teaspoons for each cup [8 oz.] of water) for 10 minutes in boiling water then straining.

5.10.13.2. Macerations

Macerations are essentially infusions that are made by soaking the herbs in cold water versus boiling. Mixtures are allowed to sit overnight in a cool place and then strained.

5.10.13.3. Decoctions

Decoctions are also similar to infusions, but the process is used for tougher plant material such as roots, barks, seeds, berries, and stems. The plant matter is chopped into thin pieces. Approximately one to two teaspoons of herbs (dried or fresh) is added to 20 ounces of water and brought to a boil. The mixture is allowed to simmer until the volume has reduced by about one-third and then strained.

5.10.13.4. Infused Oils

Infused oils can be prepared by hot or cold methods. Any kind of vegetable oil (olive, canola, sesame, and almond) will work. With cold infusion, the herbs and oil are placed in a jar and allowed to sit for three to four weeks. The hot infusion method involves cooking the mixture over low heat for three to four hours. The mixtures are strained at the end of both processes.

5.10.13.5. Ointments

Ointments are made by adding three to four ounces of infused oil to a small amount (approximately a one-inch cube) of melted beeswax. The mixture will thicken to the correct consistency once it cools.

5.10.13.6. Poultices

Poultices are ground herbs that are made into a paste with a small amount of water. The mixture is placed on a piece of gauze and then on the affected area of skin. The poultice is secured with a bandage and can be left in place for up to 24 hours.

5.11. Conclusions

When managing an IP's trauma during an isolating event, remember that the body will do the healing or repairing, and the purpose of the "treater" is to provide the body with the best possible atmosphere to conduct that self-repair. Some general principles include:

- Be in the best possible physical, emotional, and nutritional status before being exposed to a potential survival or captivity setting.
- Minimize the risk of injury at the time of survival or captivity by following appropriate safety procedures and properly using protective equipment.
- Maintain the best possible nutritional status while in captivity or the survival setting.
- Don't over treat!!! Overly vigorous treatment can do more harm than good. Use cold applications for relief of pain and to minimize disability from burns and soft tissue strains or sprains.
- Clean all wounds by gentle irrigation with large amounts of the cleanest water available.
- Leave wounds open.
- Splint fractures in a functional position.
- After the bone has healed, begin an exercise program to restore function.
- Remember that even improperly healed wounds or fractures may be improved by cosmetic or rehabilitative surgery and treatment upon rescue or repatriation.

- Common sense and basic understanding of the type of injuries are most helpful in avoiding complication and debilitation. Adequate nourishment and maintenance of physical condition will materially assist healing of burns, fractures, lacerations, and other injuries-the body will repair itself.

Psychological First Aid

Psychological first aid is provided to people experiencing acute distress after a traumatic event, helping them cope with shock, panic attacks, confusion, and changes in appetite and sleep patterns, among other symptoms. Psychological first aid is an essential part of guerrilla medicine.

The following online courses provide an introduction to psychological first aid…

Psychological First Aid (https://www.samhsa.gov/resource/dbhis/psychological-first-aid) - Offered by Johns Hopkins University through Coursera, this 7-hour course introduces students to the RAPID model of Psychological First Aid (Reflective Listening, Assessment of Needs, Prioritization, Intervention, and Disposition). While students must pay to receive a certificate of course completion, they can take the course free of charge without receiving a certificate (though site registration is required).

Psychological First Aid (PFA) Online Training is for individuals new to disaster response who want to learn the core goals of PFA, as well as for experienced practitioners who want a review of PFA. (https://www.ptsd.va.gov/professional/continuing_ed/psych_firstaid_training.asp) This is a 6-hour interactive course in which the user takes the role of a provider in a post-disaster scene. It features activities, video demonstrations, and mentor tips from the nation's trauma experts and survivors. After an introduction and overview, the course explains the Core Actions of PFA and includes a module on provider self-care.

U.S. Army Aviation Center
Subcourse AV0611 (June 1993)

Aviation Survival Part 1 -
Survival Elements, Psychological Aspects, and Survival Medicine

LESSON 3. Basic Survival Medicine

1. GENERAL

a. Foremost, among the many things that can compromise a survivor's ability to return are medical problems. Injuries commonly associated with a crash or forced landing are sprains, burns, fractures, dislocations, and other types of wounds.

b. Injuries and illnesses peculiar to certain environments can reduce survival expectance. In cold climates, and often in an open sea survival situation, exposure to extreme cold can produce serious tissue trauma, such as frostbite or death from hypothermia. Exposure to heat in warm climates, and in certain areas on the open seas, can produce heat cramps, heat exhaustion, or life-threatening heatstroke.

c. Illnesses contracted during evasion or in a captivity environment can interfere with successful survival. Among these are typhus, malaria, cholera, respiratory diseases, gastrointestinal disorders, and skin infections and infestations.

d. A review of the survival experiences from World War II, Korea, and Southeast Asia indicates that, while US military personnel generally knew how to administer first aid to others, there was a marked inability to administer self-aid. Only basic medical care had been taught to most military members. Repeated emphasis was that even minor injuries or ailments, when ignored, became major problems in a survival situation. Thus, prompt attention to the most minor medical problem is essential in a survival episode. Applying principles of survival medicine should enable

military members to maintain health and wellbeing in a hostile or non-hostile environment until rescued and returned to friendly control.

e. Information in this lesson is a basic reference to self-aid techniques and techniques found in folk medicine. The information describes procedures that can maintain health in medically austere situations. It includes items used to prevent and treat injuries and illnesses. Because there is no typical survival situation, the approach to self-aid must be flexible, placing emphasis on using what is available to treat the injury or illness. Medical treatment offered by people of other cultures may be far different from our own. Such treatment may be repugnant to some US military personnel; however, medical aid offered to survivors in non-US cultures may be the best available in the given circumstance. EXAMPLE: In rural areas of Vietnam, a poultice of python meat is used to treat internal lower back pain.

f. The procedures in this lesson must be viewed in the reality of a true survival situation. The results of treatment may be substandard compared with present medical standards. However, these procedures will not compromise professional medical care that becomes available following rescue. Moreover, in the context of a survival situation, they may represent the best available treatment to extend the individual's survival expectance.

2. PROCEDURES AND EXPEDIENTS

Survival medicine encompasses required and available procedures and expedients to preserve health and to prevent, improve, or treat injuries and illnesses. They are also suitable to be self-applied by nonmedical personnel or applied to comrades in survival situation circumstances.

a. Survival medicine is more than first aid in the conventional sense. It approaches final definitive treatment in that it does not depend on the availability of technical medical assistance within a reasonable period.

b. To avoid duplicating information generally available, the basic principles of first aid are not repeated.

3. HYGIENE In a survival situation, cleanliness is essential to prevent infection. Adequate personal cleanliness not only protects against disease germs present in the individual's surroundings, but it also protects the group by reducing the spread of these germs.

a. Washing (particularly the face, hands, and feet) reduces the chances of infection from small scratches and abrasions. A daily bath or shower with soap and hot water is ideal. If no tub or shower is available, the body should be cleaned with a cloth and soapy water, paying particular attention to the face, ears, hands, feet, and body creases (armpits, groin, and so forth). After this type of bath, the body should be rinsed thoroughly with clear water to remove all traces of soap which could cause irritation. Soap, although an aid, is not essential to keeping clean. Sand, ashes, loamy soil, and other expedients may be used to clean the body and cooking utensils.

b. When water is in short supply, the survivor should take an air bath. All clothing should be removed and the body simply exposed to the air. Exposure to sunshine is ideal, but even on an overcast day or indoors exposing the naked body to the air for two hours refreshes the body. Care should be taken to avoid sunburn when bathing in this manner. Exposure in the shade, shelter, or sleeping bag helps if the weather conditions do not permit direct exposure.

c. Hair should be kept trimmed, preferably to 2 inches or less, and the face should be clean-shaven. Hair provides a surface for parasite attachment and bacterial growth. Keeping the hair short and the face clean-shaven provides less habitat for these organisms. Wash the hair with soap and water at least weekly. When water is in short supply, comb or brush the hair thoroughly and cover it to keep it clean. Inspect the hair weekly for parasites and remove them if they exist.

d. Unclean hands are the principal means of infecting food and open wounds. They should be washed with soap and water, if available, after

handling any material likely to carry germs. This is especially important after each visit to the latrine; when caring for the sick and injured; and before handling food, food utensils, or drinking water. Keep fingers out of the mouth, and closely trim and clean fingernails. A scratch from a long fingernail could develop into a serious infection.

4. ORAL CARE

a. To prevent tooth decay and gum disease, cleanse the mouth and teeth thoroughly with a toothbrush and dentifrice at least once each day. If a toothbrush is not available, a "chewing stick" can be fashioned from a twig. Wash the twig, then chew on one end until it is frayed and brush-like. Teeth can then be brushed thoroughly with the stick. If necessary, wrap a clean strip of cloth around the finger and rub on the teeth to wipe away food particles. If neither toothpaste nor toothpowder is available, salt, soap, or baking soda can be used. Gargling and rinsing with willow bark tea helps protect the teeth.

b. Food debris that has accumulated between the teeth should be removed by using dental floss or toothpicks. The parachute inner core filaments can be separated and used as dental floss. Small twigs can be used for toothpicks. Stimulate gum tissues daily by rubbing them vigorously with a clean finger.

c. Use as much care in cleaning dentures and other dental appliances (removable or fixed) as cleaning natural teeth. Remove and clean dentures and removable bridges with a denture brush or chew stick at least once each day. Brush or rub regularly the tissue under the dentures for proper stimulation. Remove dental appliances at night or for a two- or three- hour period during the day.

5. FOOT CARE Of utmost importance in a survival situation is proper care of the feet, especially if the survivor has to travel. Serious foot trouble can be prevented by observing a few simple rules.

a. Feet should be washed, dried thoroughly, and massaged daily. If water is in short supply, air clean the feet along with the rest of the body. Trim toenails straight across to prevent ingrown toenails.

b. Break in boots before wearing them on any mission. They should fit properly, neither so tight that they bind and cause pressure spots nor so loose that they permit the foot to slide forward and backward when walking. Improvise insoles to reduce any friction spots inside the shoes.

c. Socks should be large enough to allow the toes to move freely but not so loose that they wrinkle. Wool socks should be at least one size larger than cotton socks to allow for shrinkage. Socks with holes should be properly darned before they are worn. Wearing socks with holes or those poorly repaired may cause blisters. Clots of wool on the inside and outside should be removed from wool socks because they may cause blisters. Change and wash socks thoroughly with soap and water daily. Wash woolen socks in cool water to lessen shrinkage. In camp, stretch freshly laundered socks to facilitate drying in the sun or in an air current. While traveling, damp socks can be dried by placing them inside layers of clothing or hanging them on the outside of the pack. If socks are damp, exchange them for dry ones.

d. When traveling, examine the feet regularly for red spots or blisters. Cover tender areas with adhesive tape to prevent blister formation.

6. CLOTHING AND BEDDING Clothing and bedding become contaminated with any disease germs that may be present on the skin, or in the stool or urine, or in nose and throat secretions. Therefore, keep clothing and bedding as clean as possible to decrease the chances of skin infection and the possibility of parasite infestation. Wash soiled outer clothing with soap and water. Change underclothing and socks daily. If water is in short supply, air clean clothing. For air cleaning, take clothing outdoors and air and sun for two hours. Wear air-cleaned clothing in rotation. Turn sleeping bags inside out, fluff, and air them after each use. Change bed linen at least once a week; air and sun blankets, pillows, and mattresses.

7. REST

a. Rest is necessary for the survivor because it restores physical and mental vigor and promotes healing. In the initial stage of the survival situation, rest is particularly important. After tasks requiring immediate attention are complete, inventory available resources, decide on a plan of action, and have a meal. This planning session provides a rest period without a feeling of doing nothing.

b. If possible, plan regular rest periods daily. Time allotted for rest depends on a number of factors including the survivor's physical condition and the presence of hostile forces. Usually, 10 minutes each hour is sufficient. During rest periods, change either from physical activity to complete rest or from mental activity to physical activity as the case may be. Survivors must learn to become comfortable and to rest under less-than-ideal conditions.

8. INJURY MANAGEMENT

a. Breathing. Lack of breathing is a life-threatening emergency that requires immediate attention. If the problem is the result of an acute upper airway obstruction and other resuscitation methods have failed, then an immediate cricothyroidotomy (an artificial airway) may be required to save the individual's life. A cricothyroidotomy is an opening in the trachea between the thyroid cartilage and the cricoid cartilage that permits air to pass directly from the outside into the trachea without passing through the upper air passages.

CAUTION: This procedure requires specific knowledge and training. Nonmedical personnel should perform it only in a combat survival situation and only as a last resort.

b. Bleeding. It is most important to control bleeding in survival situations where replacement transfusions are not possible. Take immediate steps to stop the flow of blood, regardless of its source. Use the method commensurate with the type and degree of bleeding. The tourniquet, when

required and properly used, saves lives; if improperly used, it may cost a life. The basic characteristics of a tourniquet and ways to use it are covered in standard first-aid texts; however, certain points merit emphasis in the survival situation. Use a tourniquet only after every alternative method has been attempted. Gradually loosen the tourniquet after 20 minutes if it is determined that medical assistance will not be available for more than two hours after applying it. If bleeding has stopped, remove the tourniquet; if bleeding continues, reapply and leave it in place. Apply the tourniquet as near the bleeding as possible, between the wound and the heart, to reduce the amount of tissue lost.

c. Pain.

(1) Controlling pain.

(a) Controlling pain is difficult and essential. In addition to its morale-breaking discomfort, pain contributes to shock and makes the survivor more vulnerable to enemy influences. Ideally, pain should be eliminated. However, this is not always possible, hence measures for pain control are beneficial.

(b) The part of the body that is hurting should be put at rest, or at least its activity restricted. The position selected should be the one giving the most comfort and the easiest to maintain. Splints and bandages may be necessary to maintain immobilization. Elevation of the injured part, with immobilization, is particularly beneficial in throbbing pain. Cleanse open wounds, remove foreign bodies, and apply a clean dressing to protect the wound from the air. Generally, warmth reduces pain (toothache and bursitis); however, in some conditions, applying cold has the same effect (strains and sprains). Warmth or cold is best applied by using water due to its high specific heat. The survivor then can try to determine which is most beneficial.

(2) Reducing pain.

(a) Drugs are very effective in reducing pain; however, they probably will not be available in a survival situation. Aspirin, APCs, and such tablets are primarily intended to combat the discomforts of colds and upper respiratory diseases. These drugs just take the edge off severe pain but should be taken if available. If no aspirin is available, there are some parts of vegetation that can be used.

(b) Most willows have been used for their pain-relieving and fever-lowering properties for hundreds of years. Fresh bark contains salicin which probably decomposes into salicylic acid in the human body. The leaves of wintergreen (checkerberry) made into a tea were used by some Indians for body aches and pains. The boiled bark of the magnolia tree helps relieve internal pains and fever and has been known to stop dysentery.

(c) To be really effective in controlling pain, stronger narcotic drugs are required. During active hostilities, morphine may be available in aircraft and individual first-aid kits. d. Shock.

(1) Circulatory reaction. Shock in some degree accompanies all body injuries; frequently, it is the most serious consequence. In essence, shock is a circulatory reaction of the body to an injury. Changes to the circulatory system initially favor body resistance to the injury (by ensuring adequate blood supply to vital structures), but these changes may progress to circulatory failure and death. All aircrew members should be familiar with the signs and symptoms of shock so that it may be anticipated, recognized, and dealt with effectively. However, the best survival approach is to treat all moderate and severe injuries for shock. No harm is done, and such treatment speeds recovery.

(2) Fluids. Normally, fluids administered by mouth are generally prohibited in the treatment of shock following severe injury. When given by mouth, such fluids are poorly absorbed and may interfere with administration of anesthesia for surgery. In survival medicine, however,

the situation is different in that the treatment being given is the final treatment. Survivors cannot be deprived of water for long periods because they are injured; in fact, recovery depends on adequate hydration. Small amounts of tea, coffee, or warm water given frequently early in shock are beneficial if the patient is conscious, can swallow, and has no internal injuries. In later shock, fluids by mouth are less effective as they are not absorbed from the intestines. Burns, particularly, require large amounts of water to replace fluid lost from injured areas. Alcohol should never be given to a person in shock or one who may go into shock.

(3) Psychogenic shock. Psychogenic shock is frequently noted immediately following an emergency, as in a bailout. Psychogenic shock, which occurs even without injury, requires attention to limit it in degree and duration. The degree of this postimpact shock varies widely among individuals, but its occurrence is almost universal. In reality the survivor has passed through two major emergencies almost simultaneously: the aircraft incident leading to the survival situation and the situation itself. Should the survivor be injured (and the majority are), a third emergency is added. It is not uncommon, then, that some psychogenic reaction with circulatory implications occurs. Resistance to this type of shock depends on the individual's personality and amount of training previously received. Treatment consists of stopping all activities (when possible), relaxing, evaluating the situation, and formulating a plan of action before the survival situation begins.

9. INJURIES

a. Head Injuries.

(1) Head injuries pose additional problems related to brain damage as well as interfering with breathing and eating. Bleeding is more profuse about the face and head area, but infections have more difficulty taking hold. This makes it somewhat safer to close such wounds earlier to maintain function.

A cricothyroidotomy may be necessary if breathing becomes difficult because of an obstruction of the upper airways.

(2) In the event of unconsciousness, watch the patient closely and keep him still. Even in the face of mild or impending shock, keep the head level or slightly elevated if there is reason to expect brain damage. Do NOT give fluids or morphine to unconscious persons.

b. Chest Injuries. Chest injuries are common, painful, and disabling. Severe chest bruises or rib fractures require that the chest be immobilized to prevent painful movements of the chest wall. Apply the bandage while the patient deeply exhales. In the survival situation, it may be necessary for you to wrap your own chest. This is more difficult but can be done by attaching one end of the long bandage (parachute material) to a tree or other fixed object. While holding the other end in the hand, slowly roll your body toward the tree. Be sure to keep enough counterpressure on the bandage to ensure a tight fit.

c. Eye Injuries. Eye injuries are quite serious in a survival situation because of pain and interference with other survival functions. The techniques for removing foreign bodies and for treating snow blindness are covered in standard first aid manuals. More serious eye injuries that disrupt the contents of the orbit may require the lids of the affected eye be taped closed or covered to prevent infection.

d. Thorns and Splinters. To reduce the danger of encountering thorns and splinters in survival situations, wear gloves and proper footgear. Promptly remove these agents to prevent infection. Wounds made by these agents are deeper than their width which increases chances of infection by those organisms (tetanus) which grow best in the absence of oxygen. Remove splinters with a sharp instrument (needle or knife), needle-nose pliers, or tweezers. Take care to get all of the foreign body out; sometimes it is best to open the wound sufficiently to properly cleanse it and allow air to enter the wound. When cleaned, treat it as any other wound.

e. Blisters and Abrasions. Foot care is extremely important in the survival situation. Care for blisters and abrasions promptly. If you note redness or pain, stop (if at all possible) to find and correct the cause. Frequently, a protective dressing, bandage, or adhesive is sufficient to prevent a blister. If a blister does occur, do NOT remove the top layer of skin. Opening a blister provides entry for infection. Clean the area with antiseptic, if available, and apply a clean dressing. Treat all open blisters and abrasions in the same manner.

f. Insect Bites. Bites of insects, leaches, ticks, fleas, and chiggers pose several hazards. Many of these organisms transmit lethal diseases, and the bite itself is likely to become infected if it is repeatedly scratched. You should inspect your body frequently for all types of animal parasites and remove them as soon as they are detected. Pay particular attention to areas such as the folds of the skin. Leaches are best removed by applying heat or some other irritant to encourage them to relax their hold on your skin. Ticks, on the other hand, should not be removed with the aid of a heat source because it increases the likelihood that contaminants will be expelled into the bite area. Remove ticks by grasping as much of their body as possible and pulling with steady pressure until it releases its hold on the skin. You can reduce your exposure to animal parasites by avoiding the shady or wooded areas immediately adjacent to open fields. Treat such wounds as any other wound. Apply a cold wet dressing to reduce itching, scratching, and swelling.

g. Fractures.

(1) Proper immobilization of fractures, dislocations, and sprains is even more important in survival medicine than in conventional first aid. In survival medicine rather than merely making the patient comfortable during transport to eventual treatment; the initial immobilization is part of the ultimate treatment. Although immobilizing body parts to help control pain helps, immobilization in the proper position hastens fracture healing and improves the ultimate functional result. In the survival situation,

immobilization must suffice for a relatively long period of time. Materials for splinting and bandaging are available in most survival situations. Proper techniques are detailed in most first-aid manuals.

(2) Reducing (setting) fractures is normally beyond the scope of first aid; however, in the prolonged survival situation, correcting bone deformities is necessary to hasten healing and obtain the greatest functional result. The best time for manipulation of a fracture is in the period immediately following the injury, before painful muscle spasms ensue. Apply traction until overriding bone fragments are brought into line (check by the other limb) and the extremity is firmly immobilized. Frequently, it is advantageous to continue traction after reduction to ensure proper bone alignment.

(3) Since plaster casts are not available in the survival situation, improvising an immobilization device is necessary. This may be done by using several parallel, pliable willow branches woven together with vines or parachute lines. Use care so that the extremity is not constricted when swelling follows the injury. In an escape and evasion situation, it may be necessary to preserve the mobility of the survivor after reducing the fracture. This is difficult in fractures of the lower extremities, although tree limbs may be improvised as crutches. With companions, using improvised litters may be possible.

(4) Reducing dislocated joints is similar to that of fractures. Apply gentle, but firm, traction and manipulate the extremity until it "snaps' back into place. If the survivor is alone, the problem is complicated but not impossible. Traction can still be applied by using gravity. Tie or wedge the distal (furthest) portion of the extremity to the fork of a tree or similar fixation point. Then allow the weight of the body to exert the necessary traction, manipulating the joint until the dislocation is reduced.

h. Burns.

(1) Burns, frequently encountered in aircraft accidents and subsequent survival situations, pose serious problems. Burns cause severe pain, increase the probability of shock and infection, and offer an avenue for considerable body fluid and salt loss. Initially, relieve the pain and prevent infection by covering the wound with any clean dressing. This reduces pain and the chance for infection. Further, such protection enhances patient mobility and the capability for performing other vital survival functions. In burns about the face and neck, ensure the victim has an open airway. If necessary, perform a cricothyroidotomy before the patient develops extreme difficulties. Burns of the face and hands are particularly serious as they interfere with the capability of survivors to meet their own needs. Soaking certain barks (willow, oak, or maple) in water leeches acid from the bark. Applying this solution soothes and protects burns through its astringent action.

CAUTION: Do not apply greases or fats to burns.

(2) Maintaining body fluids and salts is essential to recover from burns. The only way to administer fluids in a survival situation is by mouth; hence, the casualty should ingest sufficient water early before nausea and vomiting from toxicity intervenes. Consuming cooked animal eyes and blood helps restore electrolyte levels if salt tablets are not available.

NOTE: The survivor may also pack salt in personal survival kits to replace electrolytes (1/4 teaspoon per quart of water).

10. WOUNDS

a. Lacerations. Lacerations (cuts) are best left open because of the probability of infection. Clean thoroughly, remove foreign material, and apply a protective dressing. Frequently, immobilization hastens the healing of major lacerations. On occasion (tactical), it may be necessary to close (cover) the wound, despite the danger of infection, in order to control bleeding or increase the mobility of the patient. If a needle is available, the

wound may be closed by suturing. Thread may be procured from fabric, clothing, or parachute lines. If suturing is required, place individual stitches far enough apart to permit drainage of the underlying parts. Do not worry about the cosmetic effect; just approximate the tissue. For scalp wounds, you may use hair to close the wound after the wound is cleansed. Infection is less a danger in the scalp area because of the rich blood supply.

b. Abdominal Wounds. In the survival situation, abdominal wounds are particularly serious. Without immediate and adequate surgery, patients with these wounds have an extremely high mortality rate and their seriousness renders patients totally unable to care for themselves. Apply a secure bandage to keep intestines from extruding through the wound. If the intestine is extruded, do NOT replace it because it is almost certain that the results will be fatal. Cover the extruded bowel with a large dressing, and keep the dressing wet with urine or any fluid that is fit to drink. The patient should lie on his back and avoid any motion that increases intraabdominal pressure which might extrude more bowel. Keep the survivor immobile or move him on a litter. Nature eventually takes care of the problem either through death or by walling-off the damaged area.

c. Sucking Chest Wounds. These wounds are easily recognized by the sucking noise and the appearance of foam or bubbles in the wound. These wounds must be closed immediately before serious respiratory and circulatory complications occur. Ideally, the patient should attempt to exhale while holding the mouth and nose closed (Valsalva maneuver) as the wound is closed. This deflates the lungs and reduces the air trapped in the pleural cavity. Frequently, a taped, airtight dressing is all that is needed, but sometimes it is necessary to put in a stitch or two to make sure the wound is closed.

11. GENERAL TREATMENT

a. Infection. Infection is a serious threat to the survivor. The inevitable delay in definite medical treatment and the reality of the survival situation

increases the chances of wound infection. Antibiotics may not be available in sufficient amounts. In survival medicine, you must place more emphasis on prevention and control of infection by applying the techniques used before the advent of antibiotics.

(1) Unfortunately, survivors have little control over the amount and type of infection introduced at the time of injury. However, they can help control infection by wearing clean clothes. Use care to prevent additional infection into wounds. Remove clothing from wounds to avoid contaminating surrounding skin areas. Do NOT touch wounds, regardless of type or severity, with dirty hands or objects. One exception to this rule is the essential control of arterial bleeding.

(2) Promptly cleanse all wounds. Water is the most universally available cleaning agent and should be (preferably) sterile. At sea level, sterilize water by placing it in a covered container and boiling it for ten minutes. Above 3,000 feet, boil water one hour (in a covered container) to ensure adequate sterilization. Water remains sterile and can be stored indefinitely as long as it is covered.

(a) Irrigate wounds rather than scrubbing them to minimize additional tissue damage. Wash foreign material from the wound to remove sources of continued infection. Wash the skin adjacent to wounds thoroughly before bandaging. When water is not available for cleaning wounds, consider using urine. Urine may well be the most nearly sterile of all fluids available and, in some cultures, is preferred for cleaning wounds. Use urine from the midstream flow.

(b) While soap is not essential to clean wounds, a bar of medicated soap placed in a personal survival kit and used routinely does much to prevent the infection of seemingly inconsequential injuries. External antiseptics are best used for cleaning scratches, abrasions, and the skin areas adjacent to lacerations. Used in deep, larger wounds, antiseptics produce further tissue damage.

(c) Nature also provides antiseptics that can be used for wound care. The American mountain ash, found from Newfoundland south to North Carolina, and its inner bark have antiseptic properties; the red berries, containing ascorbic acid, have been eaten to cure scurvy. Sweet Gum bark is still officially recognized as being an antiseptic agent. Water from boiled Sweet Gum leaves is also used as an antiseptic for wounds.

b. Body Defenses. The human body has a tremendous capacity for combating infections if it is permitted to do so. Applying heat to an infected wound further aids in mobilizing local body defense measures. Lukewarm salt water soaks help draw out infection and promote oozing of fluids from the wound, thereby removing toxic products. Poultices of clean clay, shredded bark of most trees, and ground grass seed do the same thing. In addition to the importance of proper rest and nutrition in wound healing and infection control, you should improve the logistics of the injured part. Immobilize the injury in a position to favor adequate circulation to and from the wound. Avoid constrictive clothing or bandages. Despite all precautions, some degree of infection is almost universal in survival wounds. This is the primary reason for the open treatment advocated below.

c. The Open-Treatment Method. This method is the only safe way to manage survival wounds. No effort should be made to close open wounds by suturing or by other procedures. In fact, it may be necessary to open the wound even more to avoid entrapment or infection and to promote drainage. The term "open" does not mean that dressings should not be used. Good surgery requires that although wounds are not "closed," nerves, bone, and blood vessels should be covered with tissue. Such judgment may be beyond the capability of the aircrew member, but protecting vital structures aids in recovery and ultimate function. A notable exception to open treatment is the early closure of facial wounds which interfere with breathing, eating, or drinking. Wounds, left open, heal by forming infection resistant granulation tissue (proud flesh). This tissue is

easily recognized by its moist red granular appearance-a good sign in any wound.

d. Antibiotics. Take antibiotics, when available, to control infection. Consensus is that the drug should be a "broad spectrum" drug; that is, it should be effective against any microorganism rather than specific for just one or two types. The exact amount included in survival kits varies with the drug and the basic number and types of infections to be expected. Remember that antibiotics are potency-dated items (shelf-life about four years). Including them in survival kits requires inspecting the kit and replacing the drugs with active medical stocks.

e. Debridement. Debridement is the surgical removal of lacerated, devitalized, or contaminated tissue. Severe wounds may need debriding to minimize infection (particularly of the gas-gangrene type) and to reduce (lower) septic (toxic) shock. In essence, debridement is the removal of foreign material and dead or dying tissue. The procedure requires skill and should only be done by nonmedical personnel in cases of dire emergency. If required, cut dead skin away. Trim the muscle back to a point where bleeding starts and gross discoloration ceases. Damaged fat tends to die and should be cut away. Conserve bone and nerves where possible, and protect them from further damage. Provide ample natural drainage for the potentially infected wound and delay final closure.

f. Drainage. Adequate natural drainage of infected areas promotes healing. Generally, wicks or drains are unnecessary. On occasion, however, it may be better to remove an accumulation of pus (abscess) and insert light, loose packing to ensure continuous drainage. Sterilize the knife or other instrument used in making the incision for drainage to avoid introducing other types of organisms. The best way to sterilize in the field is with dry or moist heat.

g. Dressings and Bandages. After cleansing, cover all wounds with a clean dressing. The dressing should be sterile; however, in the survival situation,

any clean cloth helps protect the wound from further infection. A proper bandage anchors the dressing to the wound and affords further protection. Bandages should be snug enough to prevent slippage, yet not constrictive. Slight pressure reduces discomfort in most wounds and helps stop bleeding. Once in place, do NOT change dressings too frequently unless required; external soiling does not lessen the effectiveness of a dressing. Pain and some tissue damage accompanies any removal, and changing dressings increases the danger of infection.

h. Maggot Therapy. During World War I, maggots were an accepted treatment for infected wounds. They ate infected and dead tissue from those wounds. Before you decide to use maggots, however, remember that you must expose the wound to flies to introduce maggots. Because of their filthy habits, flies are likely to introduce other bacteria into the wound, possibly causing more complications. Also, maggots invade live, healthy tissue when the dead tissue is gone or not readily available. Despite its hazards, however, consider using maggot therapy when you do not have antibiotics and the wound does not heal, has become severely infected, and ordinary debridement is impossible.

12. ILLNESSES Many illnesses that are minor in a normal medical environment become major in a survival situation when the individual is alone without medications or medical care. Use standard methods (treat symptoms) to prevent expected diseases since treatment in a survival situation is so difficult. Key preventive methods are to exercise, maintain a proper diet, and maintain a current immunization record.

a. Food Poisoning.

(1) Food poisoning is a significant threat to survivors. Due to sporadic food availability, excess foods must be preserved and saved for future consumption. Methods for preservation vary with the global area and situation. Bacterial contamination of food sources has historically caused more difficulty in survival situations than ingesting so-called poisonous

plants and animals. Similarly, dysentery or water-borne diseases can be controlled with proper sanitation and personal hygiene.

(2) If the food poison is due to preformed toxin (staphylococcus or botulism), supportive treatment is best. Acute symptoms occur (nausea, vomiting, and diarrhea) soon after ingesting contaminated food. Keep the patient quiet and lying down, and ensure the patient drinks substantial quantities of water. If the poisoning is due to ingesting bacteria which grow within the body (delayed gradual onset of same symptoms), take antibiotics (if available). In both cases, symptoms may be alleviated by frequently eating small amounts of fine, clean charcoal. In a prisoner of war situation, crush chalk, if it is available, to powder and eat it to coat and soothe the intestines. Proper sanitation and personal hygiene help prevent continued reinfection or spreading infection to others.

b. Skin infections. Boils, heat rash, and fungal infections rarely develop into serious health problems. However, they cause discomfort and should be treated.

(1) Boils. Apply warn compresses to bring the boil to a head. Then open the boil using a sterile knife, wire, needle, or similar item. Thoroughly clean out the pus using soap and water. Cover the boil site and check it periodically to ensure no further infection develops.

(2) Heat rash. Keep the area clean and dry. Apply powder if available. A cold compress may help relieve itching. (3) Fungal infections. Keep the skin clean and dry, and expose the infected area to as such sunlight as possible. Do not scratch or use strong substances such as iodine and alcohol. You cannot “burn out” fungus.

c. Intestinal Parasites. You can usually avoid infestation of worms and other intestinal parasites if you take preventive measures. For instance, never go barefooted. The most effective way to avoid intestinal parasites is to not eat uncooked meat or raw vegetables that may possibly be contaminated with raw sewage or human feces used as fertilizer (night

soil). However, if you should become infested and lack proper medicine, you might try one of the home remedies. Keep in mind, though, that these home remedies are not without danger. Most of them work on the principle of changing the environment of the gastrointestinal tract.

* Saltwater – Mix four tablespoons of salt in one quart of water and drink. Do not repeat this treatment.

* Tobacco – Eat 1 to 1 ½ cigarettes. The nicotine in the cigarettes kills of stuns the worms long enough for your system to pass them. If infestation is severe, repeat treatment in 24 to 28 hours, but not sooner.

* Kerosene – Drink no more than two tablespoons of kerosene. If necessary, you can repeat this treatment in 24 to 48 hours, but not sooner.

* Hot Pepper – Peppers are effective only if they are a steady part of your diet. You can eat them raw or in soups or rice and meat dishes.

d. Diarrhea. This is a common, debilitating ailment caused by such things as a change in water and food, drinking contaminated water, eating spoiled food, becoming fatigued, and using dirty dishes. You can avoid most of these causes by practicing preventive medicine. If you get diarrhea, however, and do not have antidiarrheal medicine with you, you may find one of the following treatments is effective:

(1) Limit your intake to fluids for 24 hours.

(2) Drink 1 cup of strong tea every two hours until the diarrhea slows or stops. The tannic acid in the tea helps control diarrhea. Tannic acid is also found in the moist inner bark of hardwood trees. Boil the inner bark for two hours or more to release the tannic acid. Although this solution has a vile taste and smell, it stops most cases of diarrhea.

(3) Make a solution of treated water and one handful of ground chalk, charcoal, or dried bones. If you have some apple pomace or the rinds of citrus fruit, add an equal portion to the mixture to make it more effective.

Take 2 tablespoons of the solution every two hours until the diarrhea slows down or stops.

NOTE: You should drink a lot of liquids to replace the lost fluids.

13. AVOIDING ILLNESS In a survival situation, the dangers of disease are multiplied. Applying the simple guidelines [that] enable the survivor to safeguard personal health and that of others.

1. Keep all immunization shot current.

2. If possible, get seven to eight hours of sleep each night.

3. Purify all water obtained from natural sources before consuming.

4. After each meal, clean and disinfect eating utensils in boiling water.

5. Remove all can, refuse, and food scraps from the camp area and bury them.

6. Exchange wet clothing for dry clothing as soon as possible to avoid unnecessary loss of body heat.

7. Personal items (pipes, canteens, towels, toothbrushes, handkerchiefs, and shaving items) should not be shared.

8. Do NOT soil the ground in the camp area with urine or feces. Use latrines if available. If latrines are not available, did cat holes and cover the waste.

9. Bites and insects can be avoided by keeping the body clean, wearing proper protective clothing and using a head net, improvised bed nets, and insect repellant.

10. Cleanse the mouth and teeth thoroughly at least once daily. Most dental problems associated with a long-term survival situation can be avoided by using a toothbrush and toothpaste to remove accumulated food. If necessary, improvise devices for cleaning the teeth.

11. Never put fingers and other contaminated object into the mouth. Wash hands before handling food or drinking water, before using the fingers to care mouth and teeth, and before and after caring for the sick and injured. Also wash them after handling any material likely to carry disease germs.

14. HERBAL MEDICINE Our modern-day wonder drugs and fine laboratories and equipment have obscured the old-time "country doctor' medicine--determination, common sense, and a few primitive treatments. In many areas of the world, however, people still depend on the local witch doctor or healer to cure their ailments. Many of the herbs (plants) and treatments they use are as effective as the most modern medications available. In fact, many modern medications come from refined herbs. For example, the white, stringy part of the rinds of citrus fruits and the apple pulp (apple pomace) left after pressing out the juice contain pectin. However, you should use herbal medicine with extreme caution and only when you lack or have limited medical supplies. Some herbal medicines are dangerous and may cause further damage or even death. Small doses of valerian root, for example, are effective in treating headaches and insomnia. In doses exceeding 1/2 teaspoon per day, valerian can aggravate the headache condition and cause delusions.

Street Medicine

Street medics aid victims of police violence, treating injuries from pepper spray, rubber bullets, tear gas, blunt trauma (beatings from police batons), and bites from police dogs. Street medics also provide aid to under-served populations such as the homeless (unhoused) and communities denied access to regular medical care because of bias and abuses of corrupt government officials. Street medics help to de-escalate medical crises in what are often chaotic settings.

While some may think that police violence and gross abuse of power is something that only happens in some "third-world" dictatorship, the fact is that police violence is all too commonplace, regardless of the country in question.

In her book, Spying on Democracy, (City Lights Open Media, 2013) Heidi Boghosian, the former director of the National Lawyers' Guild, wrote about the Directorate of Emergency Services (DES) at Joint Base Lewis-McChord, WA saying:

"A civilian employee of the Fort Lewis Force Protection Division [Joint Base Lewis-McChord (JBLM) Directorate of Emergency Services (DES)] in Washington State struck up friendships with many peace activists. For at least two years, he posed as an activist with Port Militarization Resistance (PMR), a group in Washington opposing the Iraq and Afghanistan invasions. He gave information about planned protests to his supervisor, who wrote threat assessments that local law enforcement officials used in harassment campaigns that included ***"preemptive arrests and physical attacks on peaceful demonstrations, as well as other harassment"****. One individual was arrested so many times that his landlord evicted him… In the words of the government agencies involved,* ***they aimed to neutralize PMR through a pattern of false arrests and detentions, attacks on homes and friendships, and attempting to impede members from peacefully assembling and demonstrating anywhere, at any time. Harassment was systematic and pervasive.*** *PMR participants were arrested not just locally, but in other venues, including the*

Denver Democratic National Convention in 2008 and a San Francisco protest at which they were the only ones arrested… The case revealed that today's military has continued to engage in COINTELPRO-type operations and shows the extent to which the lines between the military and civilian law enforcement have blurred. Forces now used against ordinary people engaged in free speech and protest include, increasingly, weapons and tactics used by the U.S. military for combat missions. The drift from passive intelligence gathering to offensive counterintelligence is one manifestation of the difference between civilian law enforcement principles and the military's exclusive focus on defeating perceived enemies through combat, propaganda, and covert operations… The role of civilian law enforcement, in theory, is to protect the public and the Constitution whereas the role of the military is to identify the enemy and neutralize them… When the military starts identifying peaceful dissenters here as the enemy, God help us all." (pp.107-108)

The American Civil Liberties Union (ACLU) commented on the military's abuse of power and illegal spying on American citizens, saying: "There is simply no reason why the United States military should be monitoring the peaceful activities of American citizens who oppose U.S. war policies... When information about non-violent protest activity is included in a military anti-terrorism database, all Americans should be concerned about the unchecked authority this administration has seized in the name of fighting terrorism... Spying on citizens for merely executing their constitutional rights of free speech and peaceful assembly is chilling and marks a troubling trend... It is an abuse of power and an abuse of trust for the military to play any role in monitoring critics of administration policies."

A 27 February 2026 article in Small Wars Journal, SOF-ening the ICE: The Domestication of Special Warfare, by US Army Special Forces Officer Grant Tocsin [a pseudonym used for fear of retaliation for writing the article] argues that police agencies are mimicking military special operations units, dangerously accelerating police militarization in the

United States. This militarization blurs the boundaries between police and the military, resulting in repeated violations of Posse Comitatus.

It is against a militarized police force, willing to engage in preemptive arrests and physical attacks on peaceful demonstrations, a pattern of false arrests and detentions, and on-going attacks on the homes and friendships of anyone opposing government abuse and corruption, that street medics must work.

Writing for the Emergency Medicine Residents Association, Sriram Venkatesan, FAWM and Capt. Yev Maksimenko, MD, MA, DiMM, FAWM, FP-C highlighted the injuries that street medics may have to treat. In their article The Riot Trauma: What Injuries Should You Expect from Non-Lethal Police Weapons and Protests? (1 December 2020) the authors identified the following injuries common to victims of police violence at protests:

- Lacrimation, burning sensation of all mucosal surfaces, cough, nausea/emesis, vision changes/blindness from exposure to tear gas and pepper spray.
- Muscle spasm, local wound, impaled barbs (skull/intracranial injury, eye injury, pneumothorax, pharyngeal perforation), testicular torsion, blunt trauma from falls, cardiac arrhythmias, unresponsiveness, sudden death from the effects of a Taser shock.
- Blunt force trauma to the affected area, in particular danger to eyes, trachea, blunt abdominal trauma from kinetic impact projectiles: rubber bullets.
- Fractures, contusions, lacerations, traumatic brain injury, blunt chest, and abdominal trauma from police batons, riot shields, and trampling.

In their Lethal in Disguise project (https://lethalindisguise.org/) Physicians for Human Rights and the International Network of Civil Liberties Organizations (INCLO) go into greater detail about the inherent

dangers of many of the "less lethal" weapons used by police and security forces around the world.

Street Medic Neutrality

Street medics are explicitly and strictly neutral in their role and conduct. This neutrality is a core principle for most organized street medic groups. Street Medics do not participate in chants, carry political signs, or confront police or protesters directly. This neutrality is essential for gaining access to protest zones, especially when authorities may otherwise block medical personnel.

One example of a street medic neutrality is **Street Medics Austin** (https://streetmedicsaustin.org/). They define their mission saying: "One of the primary services we offer at Street Medics Austin is direct, on the ground first aid and medical support for your protest, demonstration, or other event. When we are present at your event, you can expect: clear, professional communication, triaging patients as they present and coordinating with EMS and other professional emergency services as needed, flexibility to shift with your event (we understand you can't predict everything!), a safety-first and politically neutral philosophy, guaranteeing we treat every patient on a needs basis, and not based on belief systems or which "side" they are on."

While street medics may maintain a policy of being explicitly and strictly neutral in their role and conduct, that neutrality is often not recognized by police and government agents opposing a protest or demonstration. In an article in **Truth Out**, Cops Have Repeatedly Attacked and Obstructed Street Medics During BLM Rebellion (16 August 2020) the author, Ella Fassler, listed dozens of reports of police attacking street medics, destroying their property, and actively preventing them from rendering aid to the injured.

Human Rights Watch reported Police Targeting 'Street Medics' at US Protests (17 June 2020) stating: "Given the size of crowds at recent US demonstrations following the killing of George Floyd and the frequent use of violence by police, the deployment of ambulances at the scene can often be delayed, which makes the role of street medics even more important. Police attacks on street medics only further compound the harm when they use excessive force, putting lives at even greater danger."

Crimethinc (https://crimethinc.com/), based in Olympia, WA, publishes news, analysis, books, journals, posters, videos, podcasts, and a wide range of other resources — all copyright free, produced and distributed by volunteer labor, without reliance on external funding or market trends. Some of their publications that may be of interest to street medics include:

- Protocols for Common Injuries from Police Weapons (Text reproduced below.)
- A Demonstrator's Guide to Responding to Gunshot Wounds
- A Demonstrator's Guide to Gas Masks and Goggles - Everything You Need to Know to Protect Your Eyes and Lungs from Gas and Projectiles
- A Demonstrator's Guide to Understanding Riot Munitions - And How to Defend against Them
- A Demonstrator's Guide to Understanding Police Batons - And How to Defend against Them
- I Was a J20 Street Medic and Defendant - How We Survived the First J20 Trial and What We Learned along the Way

Non-Exhaustive Protocols for Common Injuries from Police Weapons

The following protocols were written after the most recent eviction of the ZAD in 2018, during which medics set up a parallel system of emergency care as police blocked ambulances with tanks. These protocols were based in access to specific resources and skills and knowledge; they have been edited for clarity and context. Many of these protocols presume the ability to access medical care and transfer to a hospital as a backup option. The US does not have universal healthcare (yet). If you lack health insurance but have relationships with healthcare workers in your

community, please reach out to them for resources or work with the people around you to find other ways to get the care you need.

These guidelines are written for trained street medics and healthcare workers to respond to police violence. They are not a substitute for medical treatment or diagnosis. Please do not practice outside your scope!

I. Chemical Agents

Also called CS, CN, or CR gas, tear gas is an aerosol that acts as a respiratory system irritant. Pepper spray is a red oil-based substance containing capsaicin, derived from peppers, that is sprayed directly onto the skin and eyes.

A. Tear Gas

i. At low concentrations

—Symptoms: skin and eye irritations and burns

—Treatment: Rinse as much as possible, with water pressure or gentle friction.

Eyes: rinse with saline solution (water + salt, 9 grams per liter). It doesn't need to be sterile.

Skin: mix 90% water, 10% Maalox, or water with 4% baking soda. If you don't have access to those, plain water will serve for tear gas.

—Tear gas can cause trouble breathing or provoke asthma attacks. For people with asthma, employ Albuterol, or even oral prednisone (by an experienced medic) if they are out of breath. Avoid tear gas for several days afterwards.

ii. At high concentrations or with frequent repeat exposure

—Can result in disability or other neurological symptoms: nausea, vomiting, intense headache, confusion. In these presentations:

Rule out concussion!

Learn the mechanism of the injury. What happened? Gas? Sound blast from a grenade? Impact to the head? Fall? Ask the injured person and witnesses.

Did they lose consciousness or do they remember everything?

—For pain: Ibuprofen

—For moderate nausea and vomiting: oral or suppository anti-nausea medications such as Metoclopramide (Ondansetron and Promethazine are more widely available in the US). Ginger chews and peppermint or chamomile tea also helps.

—For severe vomiting and inability to keep liquids or medicines down (risk of dehydration): refer to hospital for IV fluids and observation.

—For intense confusion: Nothing by mouth. Place injured person in the recovery position and call for an ambulance.

Make sure people know to wear thick leather or specifically heat-resistant gloves (such as barbecue gloves) before picking up or touching tear gas canisters to avoid burns.

II. Concussion Grenades and other Explosive Devices

A. Blast Wounds

Blast wounds mainly damage the ears.

i. Tearing of the eardrum

—Occurs infrequently in our experience. Not an emergency.

—Symptoms: pain, bleeding from the ear, temporary reduction in hearing.

—Treatment: Examine the ear with an otoscope, ideally within 24 hours. A torn eardrum heals itself in 2 weeks.

—If a medical exam is possible, an eight-day course of antibiotic drops (ofloxacine otic) can be offered preventatively to avoid infection of the

middle ear and adjacent area (behind the eardrum). In any case, follow-up with Primary Care in 10 to 15 days is ideal for otoscopy and referral to ENT specialist if there is persistent anomaly.

ii. Blast injury to inner ear

—Occurs frequently in our experience.

—Symptoms: pain, ringing in the ears (tinnitus), loss of hearing, vertigo, or dizziness.

—Ringing in the ears does not come from the eardrum, but from the inner ear! Hearing loss is the guiding factor for treatment (not tinnitus).

—Simple hearing test: rub your thumb against your other fingers next to the person's ear. Ask them if they can hear, and do the same thing on the other side.

—Treatment: If hearing loss persists for 24 hours after the blast, make an appointment with an ENT (ear, nose, and throat) specialist as soon as possible. To avoid or at least limit permanent hearing damage (resulting from the death of cells in the inner ear), a steroid may be indicated: prednisolone in the ear (0.5mg at 1mg/kg/day for 2-3 days) is the most common prescription.

iii. Blast injury to lungs

—Occurs rarely in our experience

—Symptoms: Difficulty breathing in the days following impact.

—Treatment: Emergency. Pulmonary edema requires hospitalization. Air embolisms caused by blast injury to the lungs can cause seizures, strokes, and/or permanent brain damage when air bubbles pass from the lungs to the blood and enter the brain.

iv. Intestinal blast injury

—Occurs rarely in our experience.

—Symptoms: Abdominal pain, blood in stool (hematochezia) in the days following impact can indicate bowel perforation. Fever and abdominal distention (hard stomach) can indicate peritonitis.

—Treatment: Both of these are medical emergencies and require hospitalization!

v. Remember!

—Shelter the person from additional noise.

—Do not hesitate to contact emergency medical providers if there is any impact on cognitive function or damage to organs.

—ENT specialist consultation for blast injuries to ear is suggested within 24 to 48 hours.

—Observe people with blast injuries for several days. Symptoms indicating complications may be delayed, such as changes in hearing, breathing, and abdominal functions.

B. Shrapnel wounds

Shrapnel wounds occur frequently in our experience. Shrapnel is often plastic; sometimes it is metal. On impact with pavement, concussion grenades can propel dirt and asphalt alongside shrapnel; this increases the risk of infection. Sometimes entrance wounds are small, even tiny. Sometimes they are large and obvious. Shrapnel injuries are serious even if they don't look like a big deal. Examination, observation, and follow-up are vital.

NEVER approach or pick up a canister that is not yet smoking. It may be a concussion grenade with the capacity to blow your hand off. (This has happened both on the ZAD and in the Gilets Jaunes protests).

Examine and evaluate the breadth and depth of the wound before rushing to bandage it!

Treatment by area of injury:

i. Thorax, abdomen, face

Emergency: potential risk to life. See an experienced medic. Evacuate and evaluate respiratory/neurological/cardiovascular system distress and the extent of bleeding.

ii. Extremities

Check for:

—Damaged joints.

—Nerve damage. Nerve damage requires immediate hospitalization! Check pulse, movement, and sensation above and below the wound; compare the limbs next to each other for reference. Look for paralysis, weakness, or range-of-motion difficulties. Numbness, tingling, or pins and needles indicate nerve injury.

—Damaged tendons:

Especially on hands and feet

Occurs frequently with wounds on the back side of the hand (the side with the fingernails).

Symptoms/Signs: Visible tendon injuries at the bottom of a wound, or suspicion of a tendon injury based on anatomy.

Normal range of motion does not mean there is no damage to the tendons.

Treatment: See an experienced medic if a tendon injury is suspected. Surgical intervention may be required within 24 hours to avoid risk of rupture.

Remove shrapnel based on size. All large pieces must be removed.

i. Large foreign body in a large wound

—Occurs infrequently

—Treatment: See an experienced medic who can refer patient to a hospital or remove the foreign body and close the skin, employing excellent knowledge of anatomy and controlling the risk of infection with follow-up care and prophylactic antibiotics.

ii. Small puncture wound that looks benign but with an unknown depth

—Occurs frequently.

—Treatment: Clean, bandage, and follow up. If there are many obviously shallow pieces of foreign object (like road rash), honey dressing can draw them out without physical removal. Monitor closely for infection.

Localized treatment:

Direct compression will stop bleeding the majority of the time.

Every open wound requires basic hygiene! The medic must wash their hands with soap and water, and wear medical gloves that they change between each person.

Scrub with Betadine soap (the red kind) as soon as possible: some puncture wounds from shrapnel are not immediately visible.

Cleaning and drying:

—Wash wound with soap and water before you do anything (or with sterile saline solution if soap and water are not available).

—Follow with hydrogen peroxide, which has the advantage of foaming and can sometimes draw out little pieces of shrapnel.

—If the foreign body is small or difficult to see, use sterile forceps but don't tear at it or make it worse! It's not a big deal if it stays in, but it's usually worth trying to remove it. The body will either reject small pieces naturally, like a splinter, or create a buffer around them. The damage is done when shrapnel enters the body; the additional risk is infection.

Use sterile medical tweezers. Normal tweezers (for removing hair) are too big and tear the flesh.

A magnet can help remove metal shrapnel. Pull the shrapnel back through the path of entry—otherwise, you may create a new wound!

If it's too painful, use local anesthesia such as lidocaine spray in the bottom of the wound.

Disinfect with antiseptics:

—Remember: if an antiseptic bottle is open for over a month, dispose of the bottle. Mark the date on the bottle upon opening. Prioritize smaller bottles to avoid expiration.

—Yellow Betadine, povidone iodine. (Use red Betadine first if washing with soap and water is impossible.) It exists in individual doses too. Iodine allergies don't apply to Betadine.

—Chlorhexidine is good, such as one-time-use Dosiseptine, but not Biseptine (alcohol-based) because it stings.

—Diluted sodium hypochlorite (Dakin's solution) works well but has to be diluted at 50% in sterile water, so it is impractical. Alcohol is efficient but burns a lot.

—For puncture wounds: Disinfect surface and interior. Use an antiseptic syringe without a needle. Put the end of the syringe inside the wound before injecting. Don't use hydrogen peroxide for this.

Bandaging:

—Approximated wound with controlled bleeding: dry bandage, gauze compress, elastic bandage.

—Wounds oozing blood or pus: Consider an absorptive cushion like hemostatic packing, followed by a compress and bandage on top.

—If moderate bleeding or un-approximated wound: use clean raw honey (not the corn syrup kind), Neosporin, or tulle gras, then compress and bandage.

Dressing changes:

—Every 24 hours at the beginning (depending on severity), then every 48 hours.

—Rinse with saline solution. Don't reapply antiseptics, as this can delay healing.

—Prevent secondary infections. These occur frequently with shrapnel wounds! Signs of infection include redness, inflammation, pus and weeping, or fever. Get an experienced medic's advice and local or oral antibiotics for 48 hours after injury.

—Abscesses may necessitate x-ray, ultrasound, or surgical consultation depending on the wound.

To pass on to injured people: If you experience fever, chills, stiffness, redness, wetness around the wound, red plaques or streaks on the skin, or a neurological or motor deficiency, consult a doctor, medic, or go to an emergency department immediately.

- Takeaways for shrapnel wounds:
- Don't dig too hard to get out small pieces.
- Assess immediately for nerve or tendon injury.
- Monitor for signs of secondary infection for several days.

III. Rubber bullet injuries

Rubber bullet injuries often leave a big bruise. Check for other lesions! If you suspect trauma that will necessitate surgery, do not give them anything by mouth. No drinking, no eating, no smoking.

A. By location

i. Large bruises to extremities

—Assess neurovascular status: Pulse, movement, sensation, and color. If there's an anomaly, hospitalization is urgent.

—Palpate the bones for pinpoint pain and crepitus. Test each joint for range of motion. If you can't rule out a fracture, get an x-ray within 24 hours. Suspected displaced fracture (shortening, etc.) requires an x-ray immediately.

—Rubber bullet impacts on muscles and tendons are not an emergency.

—Treat all bruises or hematomas with Arnica (Arnica Montana) tincture or gel or Ground Daisy (Bellis perennis) tincture. Apply topically as soon as possible (actual tincture, not homeopathic).

—If plan is to hospitalize, wait before applying topical treatment: it may mask the seriousness of the condition.

—The most important thing is to immobilize the injury.

ii. Facial impact

—See an experienced medic.

—Palpate facial bones looking for pinpoint pain and crepitus indicating a fracture: orbitals, nose, zygomatic processes, mandible, chin, dental articulation (closure and alignment). Examine each tooth.

—For teeth that are broken, moving, unseated, or painful—see a dentist immediately. Conserve the tooth in milk, saline solution, or saliva. Ideally, the injured person would carry it in their mouth, taking care not to swallow.

Simple Neurological Face Assessment:

Compare sensation on both sides of the forehead, cheeks, chin

Movement: symmetry in smile, eyes symmetrical when tightly closed, eye movement (in both directions, vertically, horizontally, diagonally,

inversion and aversion), pupils equal, round, reactive to light and accommodating.

iii. Eye impact

—Immediate hospitalization.

—Nothing by mouth: no food, no drink, no smoking.

—Rinse area with sterile saline solution.

—Have the person lie down and cover both eyes with sterile compresses.

iv. Nose impact

—Probable fracture.

—Get an x-ray.

—Epistaxis is bleeding from the nose; it can become a large hemorrhage.

Pinch the bridge of the nose between two fingers, neck bent forward.

Experienced medics can plug nostrils with gauze.

For large amounts of blood loss, call an ambulance.

v. Thorax impact

—Pain may indicate a broken rib or lung damage. See an experienced medic.

—Rib fracture: pinpoint pain when palpated along the sternal line.

Pain with deep inhalation.

No respiratory distress or coughing.

If it's a simple fracture, treat with rest, painkillers to ensure deep breathing and avoid pneumonia, and topical comfrey (Symphytum officinale) salve 2 to 3 times daily.

—Pneumothorax: pain and cough, sometimes spitting blood.

X-ray within 24 hours, or immediately if there is respiratory distress.

Monitor respiratory rate. Normal is 15-20 breaths per minute.

vi. Abdominal impact

—See an experienced medic.

—Check for:

Pain around the liver (right upper quadrant) and the spleen (left upper quadrant): signs of internal hemorrhage indicate danger. Get an ultrasound quickly.

Blood in stool, abdominal pain, hard stomach area or fever, suspicion of peritonitis: immediate hospitalization.

vii. Both abdominal and thoracic impact

—Check for signs of internal hemorrhage (shock) such as pallor, weakness, diaphoresis (sweating), tachycardia with normal blood pressure. —Late signs include low blood pressure, altered mental status, loss of consciousness. —Watch them for several hours!

viii. Lower back impact

—Look for blood in the urine. Ideally get a urinalysis done to check for kidney damage.

ix. Testicular impact

—If bruising or excessive pain, get an emergency ultrasound.

Dental Emergencies

In a remote area, access to routine dental care may be delayed, but prompt action is crucial for dental emergencies. Seek immediate care if you experience severe pain, swelling, uncontrolled bleeding, or a knocked-out tooth. If your regular dentist is unavailable, visit a hospital emergency room for serious issues like broken jaws or severe infections.

One of the best guides for providing dental care without access to a dentist is Where There Is No Dentist, by Murray Dickson. All guerrilla medics should be familiar with this reference.

Home remedies can provide temporary relief from tooth pain while you seek professional care.

- **Saltwater Rinse**: Mix half a teaspoon of salt in a glass of warm water, swish for 30 seconds, then spit. This reduces inflammation and cleans the area.
- **Cold Compress**: Apply ice wrapped in a cloth to the outside of your cheek for 15–20 minutes to numb pain and reduce swelling.
- **Clove Oil**: Dab a small amount on a cotton ball and apply it to the painful tooth. Clove oil contains eugenol, a natural anesthetic.
- **Over-the-Counter Pain** Relievers: Use a combination of ibuprofen and acetaminophen to reduce pain and inflammation.
- **Peppermint Tea Bag**: Cool a used tea bag and place it on the affected area—menthol acts as a mild numbing agent.

In extreme cases a decayed or damaged tooth may need to be extracted in the field. The Merk Manual discusses emergency tooth extraction. (https://www.merckmanuals.com/professional/dental-disorders/how-to-do-dental-procedures/how-to-do-an-emergency-tooth-extraction)

Community Herbalists

The Herbalists' Charter

Ordained by Henry VIII, 1543

Be it ordained, established and enacted, by Authority of this present Parliament, That at all Time from henceforth it shall be lawful to every Person being the King's subject, having Knowledge and Experience of the Nature of Herbs, Roots and Waters, or of the Operation of the same, by Speculation or Practice, within any part of the Realm of England, or within any other of the King's Dominions, to practice, use and minister in and to any outward Sore, Uncome Wound, Aposelmations, outward Swelling or Disease, any Herb or Herbs, Ointments, Baths, Pultess, and Emplaisters, according to their Cunning, Experience and Knowledge in any of the Diseases, Sorea and Maladies before said, and all other like to the same, or Drinks for the Stone, Strangury or Agues, without suit, vexation, trouble, penalty or loss of their goods.

A community herbalist is a practitioner who uses herbal medicine to support the health and well-being of their local community, often focusing on accessibility, education, and empowerment. They typically draw from traditional, folk, and modern knowledge of plants, emphasizing local, easily accessible herbs and sustainable practices. Community herbalists do not diagnose or treat medical conditions but instead act as teachers and guides, sharing knowledge through workshops, community gardens, herbal clinics, and informal advice.

They often work within a holistic, anti-capitalist, and anti-oppression framework, valuing interconnectedness between people, plants, and the environment. Their work may include herb growing, foraging, remedy making, and educational outreach, and they may serve underserved populations or build resilient health practices within neighborhoods.

While some community herbalists have formal training, many learn through self-study, apprenticeships, or experiential learning. Importantly, there is no standardized licensing of herbalists in the United States, so the path to becoming a community herbalist is diverse and personal.

Some herbalists may be members of organizations like the American Herbalists Guild (https://www.americanherbalistsguild.com/), the Herb Society of America (https://www.herbsociety.org/), or the American Association of Drugless Practitioners (https://aadp.net/). Others may simply be recognized by the communities that they serve, without any organizational memberships or certifications.

Groups like the Herbalista Free School (https://herbalista.org/) the Herbal Medics Academy (https://herbalmedics.academy/), the Herbal Academy (https://theherbalacademy.com/), the Chestnut School of Herbal Medicine (https://chestnutherbs.com/) the Science & Art of Herbalism (https://scienceandartofherbalism.com/), the Northeast School of Botanical Medicine (https://7song.com/) and the Berkeley Herbal Center (https://www.berkeleyherbalcenter.org/) all offer training and guidance to community herbalists.

Complementary and Alternative Healthcare

Complementary and alternative healthcare and medical practices (CAM) is a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine. The list of practices that are considered as CAM changes continually as CAM practices and therapies that are proven safe and effective become accepted as the "mainstream" healthcare practices.

Traditional Chinese Medicine (TCM) and Ayurveda are widely practiced alternative medicinal systems, but their safety and effectiveness vary significantly. Ayurveda, the traditional Indian medicine (TIM) and

traditional Chinese medicine (TCM) remain the most ancient yet still living traditions in complementary and alternative healthcare. There has been increased global interest in traditional medicine, with efforts to monitor and regulate herbal drugs and traditional medicine underway in many countries. China has been successful in promoting its therapies with more research and science-based approach, while Ayurveda still needs more extensive scientific research and a stronger evidence base.

TCM: There is more scientific research and clinical evidence supporting TCM compared to Ayurveda. Practices like acupuncture have shown proven efficacy for chronic pain, migraines, and nausea. Herbal formulations used in TCM are increasingly studied, with some demonstrating benefits in managing conditions like menopausal symptoms and inflammation. Wushan TCM (https://wushantcm.com/) offers several courses in Chinese medicine.

Ayurveda: While Ayurvedic practices such as yoga, meditation, and dietary changes are associated with positive health outcomes, the evidence for its herbal and mineral-based treatments is mixed and often weak. Some studies suggest potential benefits, but many lack rigorous clinical validation.

In the West, naturopathic medicine and homeopathic medicine each arose in the late 19th century as reactions to the largely ineffectual and toxic conventional approaches of the day: purging, bleeding, and treatments with heavy metals such as mercury and arsenicals.

Today, **Naturopathy** is a well-established alternative medical system that emphasizes the body's innate ability to heal itself through natural means. It focuses on non-invasive treatments, such as dietary changes, herbal medicine, and lifestyle modifications, and is recognized as a licensed system in several countries, including the United States and Canada.

Homeopathy: There is no reliable scientific evidence that homeopathy is effective beyond a placebo effect. Major reviews by

authoritative bodies—including the Australian National Health and Medical Research Council (NHMRC), the European Academies' Science Advisory Council (EASAC), and the Cochrane Collaboration—have concluded that homeopathy does not work for any health condition. The principles behind homeopathy—such as "like cures like" and the idea that extreme dilution increases potency—contradict established laws of physics, chemistry, and biology.

Folk Medicine

Folk medicine is the mixture of traditional healing practices and beliefs that involve herbal medicine, spirituality and manual therapies or exercises in order to diagnose, treat or prevent an ailment or illness.

The World Health Organization states that it is mostly practiced by indigenous or native populations and as much as 80% of the population in certain countries within Asia and Africa rely on it for primary care. Folk Medicine may also be referred to as alternative medicine, holistic medicine and Eastern Medicine (named after its historic practice in countries of Asia, particularly China).

Whether you include folk medicine in your practice or not, it is still useful to have some knowledge of these practices since a large part of the world's population relies on folk medicine.

Examples of courses in folk medicine include:

- **Curanderismo**: Traditional Healing Using Plants - University of New Mexico on Coursera
- **Southwest Institute of Healing Arts (SWIHA)** (https://swiha.edu/) provides a 745-hour Diploma in Western Herbalism and a Holistic Health & Wellness Coach Diploma, combining phytochemical science with intuitive, spiritual approaches to plant medicine. Programs are available on campus in Tempe, Arizona, and online.

- **The Gaia School of Healing** (https://www.gaiaschoolofhealing.com/) is an educational organization based in Putney, Vermont, founded in 2001. It offers structured courses, workshops, retreats, and apprenticeships focused on herbalism, sacred plant medicine, and ancestral healing practices. The school is recognized for its immersive, experiential learning approach that blends scientific knowledge with spiritual and ecological awareness.

The above are given only by way of example, and may or may not be right for your practice of guerrilla medicine. As with any study of healthcare and medicine, you should do your own research to determine what will best meet your needs.

Food Production, Nutrition, and Healthy Living Courses

EatFresh.org Mini Course (https://eatfresh.org/eatfreshorg-mini-course/) is a free, mobile-friendly nutrition course with 15 topics on healthy living, using easy, inexpensive recipes. Available in English and Spanish, it is funded by USDA SNAP.

Organics for Orphans (https://thriveforgood.org/courses/) The Thrive Institute is the first online organic gardening and nutrition course created to decrease hunger and malnutrition in emerging countries.

Create Better Health (SNAP-Ed) Online Course (https://extensioncourses.usu.edu/product/create-better-health/) is a free 8-lesson course that will help you learn how to eat well and be active on a budget! The course was developed by the Utah State University Extension Create Better Health (SNAP-Ed) program based on the USDA Dietary Guidelines for Americans, MyPlate, and the Physical Activity Guidelines for Americans. The lessons include a nutrition topic, food resource

management skills, physical activity discussions, and quick, healthy recipes.

Additional **USDA SNAP-ED Professional Development Courses** can be found here (https://snaped.fns.usda.gov/training/professional-development)

SDG Academy Global Public Health Course (https://sdgacademy.org/course/global-public-health/) is a massive open online course all about the institutions, infrastructure and interplay of actors that constitute health not only in local communities, but also on a global scale. In this course, you'll discover how health is influenced by environment, food systems, energy security, transport, trade and human migration.

Nutrition Science: Lifestyle Medicine (https://on.abdn.ac.uk/courses/lifestyle-medicine/) Study lifestyle medicine online for free with expert practitioners and researchers from the University of Aberdeen. Investigate the role of diet, exercise, mental health and environment in improving health outcomes.

Harvard Medical School offers an online course **6-Week Plan for Healthy Eating** - This online course is an engaging, empowering and exciting way to learn. The course is designed as a 6-week plan; however, you can watch and learn at your own pace. There are interactive exercises, fun quizzes and downloadable worksheets and recipes all designed to help you make healthier food choices.
(https://www.harvardhealthonlinelearning.com/courses/6-week-plan-for-healthy-eating-2)

The National Heart, Lung, and Blood Institute (https://www.nhlbi.nih.gov/education) offers tutorials for the public on heart and vascular, cholesterol, high blood pressure, overweight and physical activity, and sleep disorders.

Native Roots Greener Futures - Walking the Kálhaculture Way (https://cwis.org/study-with-us/our-courses/) - This 3.5-hour course explores indigenous knowledge systems, the benefits of wild plants for health and medicine, and the negative effects of climate change on wild plants and Indigenous Peoples who rely on them. It also provides specific steps about how to become an activist scholar and a community change maker, in order to apply and share the principles of Indigenous ways of knowing with the purpose of protecting and nourishing the environment.

FAO eLearning Academy (https://elearning.fao.org/) offers a wide range of free, multilingual, and certified courses on food production, sustainability, and nutrition, aligned with global goals for resilient agrifood systems. These courses are suitable for those interested in sustainable agriculture, food security, and environmental stewardship.

Texas A&M AgriLife Extension (https://nutrition.tamu.edu/educational-resources/) provides free online courses on food safety, nutrition, and sustainable food practices, including specialized training for food service workers and cottage food producers. Their resources are evidence-based and regularly updated.

Dietary Guidelines for Americans – by US Department of Agriculture (https://www.dietaryguidelines.gov/) American households must prioritize diets built on whole, nutrient-dense foods—protein, dairy, vegetables, fruits, healthy fats, and whole grains. Paired with a dramatic reduction in highly processed foods laden with refined carbohydrates, added sugars, excess sodium, unhealthy fats, and chemical additives, this approach can change the health trajectory for so many Americans.

Garden to Table Cookbook - by US Department of Veterans Affairs (https://www.nutrition.va.gov/docs/UpdatedPatientEd/2021GardentoTableCookbook.pdf) This cookbook focuses on recipes that use fresh produce from the store, garden, or local farm, promoting healthy, sustainable eating.

An Online Community First Aid Program

Community first aid training is critically important. It significantly enhances community resilience by equipping individuals with the skills to respond effectively during emergencies—especially when professional medical help is delayed. The following courses can be used to present first aid to community members.

Community First Aid Response Course by the World Health Organization (https://openwho.org/channel/Community+First+Aid+Response+Course/631540) is an approximately 2-hour video course, intended to present basic first aid concepts to community members. The course equips lay responders to recognize emergency conditions, provide safe and simple lifesaving actions, and support patients until they reach formal care—particularly in areas with limited emergency services.

Stop the Bleed Interactive Course (https://www.stopthebleed.org/get-trained/online-course/) The ACS Stop the Bleed Interactive Course guides individuals through the three methods of bleeding control using video demonstrations, interactive learning, and spontaneous quizzes. This ACS Stop the Bleed Interactive Course is free to all students and can be taken multiple times to learn and refresh knowledge of the ACS Stop the Bleed Course.

The Seizure Recognition and First Aid Certification Course (https://learn.epilepsy.com/) formally educates the public on the Epilepsy Foundation's approved procedures for recognizing seizures and responding to someone having a seizure.

Basic Life Support (BLS) (https://mccmscontent.mayo.edu/LSC/BLS/English/index.html#/) is a critical set of techniques used to maintain breathing and circulation in individuals experiencing life-threatening emergencies such as cardiac or respiratory arrest.

Infectious Disease in the TEOTWAWKI World

The TEOTWAWKI World scenario is a fictional setting where the only antibiotics available are those designed for pets. Militant Medic's six-part article provides a detailed guide on managing infectious diseases in this unique scenario, emphasizing the importance of OPSEC and the use of pet antibiotics. The 2015 article is part of a series that was posted to Survival Blog (https://survivalblog.com/) and covers various aspects of infectious disease in the TEOTWAWKI World, offering a comprehensive resource for those preparing for such scenarios. Militant Medic is a physician who had been practicing for 11-years when he published this article.

- Part 1: (https://survivalblog.com/2015/11/10/infectious-disease-in-the-teotwawki-world-part-1-by-militant-medic/)
- Part 2: (https://survivalblog.com/2015/11/11/infectious-disease-in-the-teotwawki-world-part-2-by-militant-medic/)
- Part 3: (https://survivalblog.com/2015/11/12/infectious-disease-in-the-teotwawki-world-part-3-by-militant-medic/)
- Part 4: (https://survivalblog.com/2015/11/13/infectious-disease-in-the-teotwawki-world-part-4-by-militant-medic/)
- Part 5: (https://survivalblog.com/2015/11/14/infectious-disease-in-the-teotwawki-world-part-5-by-militant-medic/)
- Part 6: (https://survivalblog.com/2015/11/15/infectious-disease-in-the-teotwawki-world-part-6-by-militant-medic/)

The Northeast School of Botanical Medicine offer a course **Herbalism for the Post-Collapse, Dystopian Herbal Medicine 'Rise of the Herbalist'** (https://theginkgotree.ca/wp-content/uploads/2019/09/Dystopian-Herbal-Handout-7song.pdf) in which students set up an herbal medicine clinic and camp. The 2024 handout **Post Collapse Class Ithaca** is available here (https://7song.com/wp-content/uploads/2024/11/Post-Collapse-Class-Ithaca-Version-2024.pdf).

K9 Causality Care (First Aid for Dogs)

Dogs provide tactical support, pull sleds, and provide security and companionship in remote operational environments. The following courses, videos, and webinars offer guidance on providing first aid for dogs.

- **Bleeding Wounds in Working K9s: Combining the Scientific Evidence with Lessons Learned in the Field** (https://www.youtube.com/watch?v=Hpk4UyUOht8)
- **Rethinking Heat Injury in Working Dogs 2025** (https://www.youtube.com/watch?v=P3WvBN11QcU)
- **Animal First Aid and CPR** (Recorded Webinar) (https://www.train.org/cdctrain/course/1132666/details)
- **Animal Emergency Preparedness** (https://www.train.org/cdctrain/course/1025307/details)
- **Animal Safety, Movement, and Handling Equipment** (Recorded Webinar) (https://www.train.org/cdctrain/course/1131978/details)
- **Animal Decontamination Virtual Series: (Recorded Session 1) Animal Decontamination Part 1** (https://www.train.org/cdctrain/course/1128927/details)
- **Animal Decontamination Virtual Series: (Recorded Session 2) Animal Decontamination Part 2** (https://www.train.org/cdctrain/course/1128929/details)

Guerrilla Medicine Recommended Reading List

- A Practical Guide to Prolonged Casualty Care - by Melissa Givens MD, MPH
- Advanced Tactical Paramedic Protocols Handbook, 11th Edition - by US Special Operations Command
- Armageddon Medicine: How to be Your Own Doctor in 2012 and Beyond. An Instruction Manual - by Cynthia J Koelker MD
- Armageddon Pharmacy: Herbal Medicine. When The Drugstore Is Closed Paperback – by Jennifer Rader
- Auerbach's Wilderness Medicine 7th Edition - by Paul S. Auerbach MD MS FACEP MFAWM FAAEM
- Bad Bug Book - Handbook of Foodborne Pathogenic Microorganisms and Natural Toxins - by US Foord and Drug Administration
- Diagnosis and Treatment - A Training Manual for Primary Health Care Workers - by Dr Keith Birrell, Dr Ginny Birrell, et.al.
- Ditch Medicine: Advanced Field Procedures for Emergencies - by Hugh Coffee
- Do It Yourself Medicine – by Ragnar Benson
- Doomsday Book of Medicine: What Will You Do When There Are No Doctors or Medicine? 2nd Edition - by Ralph La Guardia MD
- Emergency War Surgery 5th Edition - by Office of The Surgeon General United States Army
- Encyclopedia of Herbal Medicine: 560 Herbs and Remedies for Common Ailments (2023 Update) - by Andrew Chevallier
- Essential Guide to Primary Care Procedures 2nd Edition - by E.J. Mayeaux
- Ethicon Wound Closure Manual - by Ethicon
- Expedition and Wilderness Medicine - by Gregory Bledsoe, Michael J. Manyak, and David A. Townes
- Herbal Medic: A Green Beret's Guide to Emergency Medical Preparedness and Natural First Aid - by Sam Coffman

- Improvised Medicine: Providing Care in Extreme Environments 2nd Edition - by Kenneth V. Iserson MD
- National Snakebite Management Guidelines - published by the World Health Organization in the Kingdom of Eswatini
- Medical Handbook for Limited Resource Settings Vol.2 - by Daniel O. Griffin and Sofia Maddalena Preatoni
- Merck Manual of Medical Information - by Mark H. Beers
- Mini-Manual for the Urban Defender - by John Spencer
- Osteopathy & the Zombie Apocalypse: a Career Guide for Pre-Med and Pre-College Students: Why you want to be an Osteopathic Medical Doctor at the End of the World! - by Dr. Mitchell A Cohn DO
- Pararescue Medical Operations Handbook, 8th Edition - by USAF
- Primary Anesthesia - by Maurice King
- Primary Surgery Volume One Non-Trauma, 2nd Edition - by Michael Cotton
- Primary Surgery Volume Two Trauma, 2nd Edition - by Michael Cotton
- Prolonged Field Care Field Handbook (2025 Edition) - Special Operations Medical Association
- Ranger Medic Handbook, 2022 Edition - by US Army
- Remote and Austere Medicine: Field Guide for Practitioners - by Aebhric O'Kelly and Jason Jarvis
- Riot Medicine – by Hakan Geijer
- Survival and Austere Medicine 3rd Edition - by The Remote, Austere, Wilderness and Third World Medicine Discussion Board Moderators
- Survival Evasion Resistance Escape (SERE) Operations (AF Handbook 10-644) (27 March 2017) (Chapter 5 - SERE Medicine)
- Survival Gardening: Grow Your Own Emergency Food Supply, from Seed to Root Cellar - by Sam Coffman
- Survival Medicine Handbook: The Essential Guide for When Help is NOT on the Way 4th Edition - by Joseph Alton MD and Amy Alton

- Survival Nurse: Running an Emergency Nursing Station Under Adverse Conditions - by Ragnar Benson
- Surviving the Zombie Apocalypse: First Aid Kit Building and Mini Med School for Preppers - by Ryan Chamberlin, MD
- The Healing Garden: Cultivating and Handcrafting Herbal Remedies – The Complete Guide to Medicinal Plants with 30 Profiles, 70 Recipes, and Photographic Tutorials - by Juliet Blankespoor
- Village Medical Manual 7th Edition: A Guide to Health Care in Developing Countries (Volumes 1 & 2) - by Mary Vanderkooi
- War Surgery - Working with Limited Resources in Armed Conflict and Other Situations of Violence, Volume 1 & 2 - by ICRC
- Where There Is No Dentist (2021 Update) - by Murray Dickson
- Where There Is No Doctor: A Village Health Care Handbook - by David Werner, Carol Thuman, and Jane Maxwell

RAPID CASUALTY ASSESSMENT

01

ASSESS scene safety
including sources of burning, electrocution, or enemy threat

02

ASSESS the casualty for responsiveness

03

RETRIEVE first aid kit

04

M **ASSIVE BLEEDING**
STOP life-threatening bleeding

A **IRWAY**
MAINTAIN an open airway

R **ESPIRATION**
ASSESS respiration and breathing ***LOOK, LISTEN AND FEEL!***

C **IRCULATION**
MONITOR casualty's blood circulation and prevent shock

H **YPOTHERMIA**
PREVENT hypothermia by keeping the casualty warm and dry

05

CHECK for other injuries
including eye trauma, head injury, burns, or fractures

06

DOCUMENT medical aid on a DD1380 TCCC Card

07

COMMUNICATE with medical personnel any aid provided

Tactical Combat Casualty Care

Evaluation of a casualty is necessary to identify and treat all life-threatening conditions and other serious wounds. Rapid and accurate evaluation of the casualty is the key to providing effective first aid.

Use **MARCH** as the inspection process for the proper order of treatment and **PAWS** for additional casualty care issues:

Massive Hemorrhage	Pain
Airway	Antibiotics
Respirations	Wounds
Circulation	Splinting
Head Injury / Hypothermia	

Tactical Combat Casualty Care (TC3) can be divided into three phases:
Care under fire, Tactical field care, and Tactical evacuation care.

Care under fire limits the care you can provide:

- Return fire as directed or required before providing medical treatment.
- Determine if the casualty is alive or dead.
- Provide tactical care to the live casualty.
- Administer life-saving hemorrhage control.
- Transport the casualty, his/her weapon, and mission-essential equipment when the tactical situation permits.
- Re-check bleeding control measures as the tactical situation permits.

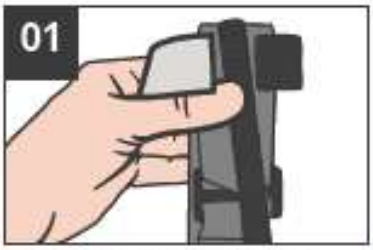
Tactical field care occurs when you and the casualty are relatively safe and no longer under effective hostile fire.

- Form a general impression of the casualty as you approach (extent of injuries, chance of survival).
- Check for responsiveness.
- Position the casualty and open the airway.
- Assess for breathing and chest injuries.
- Identify and control breathing.
- Check for fractures.
- Check for burns.
- Administer pain medications and antibiotics (the casualty's combat pill pack) to any Soldier wounded in combat.
- Transport the casualty to the site where evacuation is anticipated.
- Document injuries on the casualty's TC3 card.

Tactical evacuation care is rendered during casualty evacuation (CASEVAC):

- Care is rendered while the casualty is awaiting pickup or is being transported.
- A Soldier accompanying an unconscious casualty should monitor the casualty's airway, breathing, and bleeding.

COMBAT APPLICATION TOURNIQUET (CAT)



REMOVE CAT tourniquet from the first aid kit or carrying pouch

SLIDE the injured arm or leg through the loop of the self-adhering band

POSITION self-adhering band at least 2-3 inches above the wound site

PULL the free end of the band as tightly as possible around the extremity

TWIST the windlass rod to tighten the self-adhering band until the bleeding has stopped

APPLY tourniquet to stop bleeding within 1 **minute**

LOCK the windlass rod inside either clip to secure it

ROUTE the self-adhering band between the clips and around the rod

SECURE windlass rod and self-adhering band under the windlass safety strap

WRITE the time of tourniquet application on the safety strap and on a DD1380 TCCC Card or forehead

COMMUNICATE with medical personnel any aid provided

WOUND PACKING AND PRESSURE BANDAGE

EXPOSE the wound, if not previously exposed.

LOCATE the source of the most active bleeding and apply direct pressure.

REMOVE the dressing from its sterile package.

PACK it tightly into the wound directly over the site of the most active bleeding. **Ensure the gauze extends 1–2 inches above the skin.**

After packing **HOLD** pressure for minimum of 3 min.

REASSESS to ensure bleeding has been controlled while maintaining pressure.

IF BLEEDING HAS NOT BEEN CONTROLLED:

07a If packed with hemostatic dressing, remove and repack starting at **STEP 03.**

OR

07b If packed with gauze, apply additional gauze and pressure (for 3 min) until bleeding stops.

REMOVE the pressure bandage from the pouch and packaging.

PLACE the bandage pad over the wound, or dressing applied, by applying pressure.

WRAP tightly around the extremity ensuring that the edges of the pad are covered.

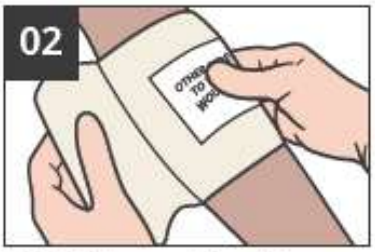
SECURE Velcro or closure bar onto the last bandage wrap.

CHECK for circulation by feeling for a distal pulse.

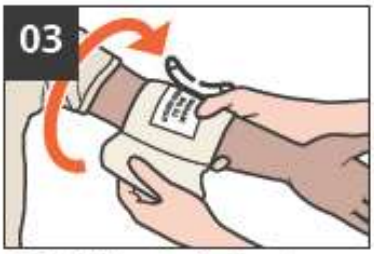
DOCUMENT all findings and treatments on the DD1380 TCCC Casualty Card.

PRESSURE BANDAGE APPLICATION

REMOVE the bandage from the pouch and packaging



PLACE the pad directly on the wound and maintain pressure



WRAP the elastic bandage around injured extremity and maintain pressure

INSERT the elastic bandage into the pressure bar

REVERSE WRAP the elastic bandage back over the top of the pressure bar

WRAP bandage tightly over the pressure bar until pad edges are covered

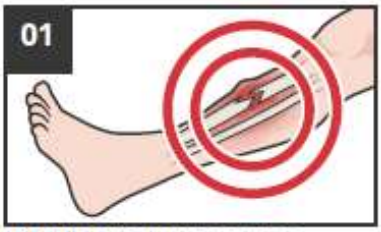
SECURE the hooking end of the pressure bar into the elastic bandage

ASSESS circulation below bandage to ensure a pulse; loosen, if needed

DOCUMENT medical aid on a DD1380 TCCC Card

COMMUNICATE with medical personnel any aid provided

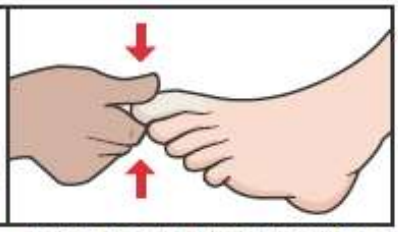
SPLINT APPLICATION



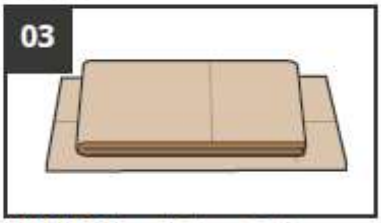
IDENTIFY the location of the fracture.

NOTE: Have the casualty or someone else manually stabilize the area.

Before applying the splint, **CHECK** the distal pulse (pulse below the fracture)...



and capillary refill (color returning to the nail bed after pressing on it) on the injured extremity.



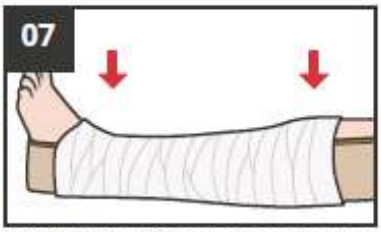
PREPARE the splint materials for application.

NOTE: Measure and shape the splint on the opposing uninjured extremity.

PREPARE securing materials (cravats, elastic wraps/bandages, etc.)

APPLY the splint to the injured extremity with the limb, in the position of function (a normal resting position), if possible.

SECURE the splint in place with appropriate materials.



ENSURE the joints above and below the fracture are immobilized in the splint whenever possible.

RECHECK the distal pulse after applying the splint. If the pulse is not palpable, loosen the splint, reposition, and reapply the splint.

If the casualty has pain, severe combat wounds, and is conscious and can swallow, **ADMINISTER** all pills (pain medication and antibiotics) from the CWMP with water.

DOCUMENT all findings and treatments on a DD Form 1380 TCCC Casualty Card and attach it to the casualty.

HYPOTHERMIA PREVENTION AND TREATMENT

NOTE: Aggressive steps should be taken early to prevent further loss of body heat and, when possible, actively warm (by adding external heat) trauma and burn casualties.

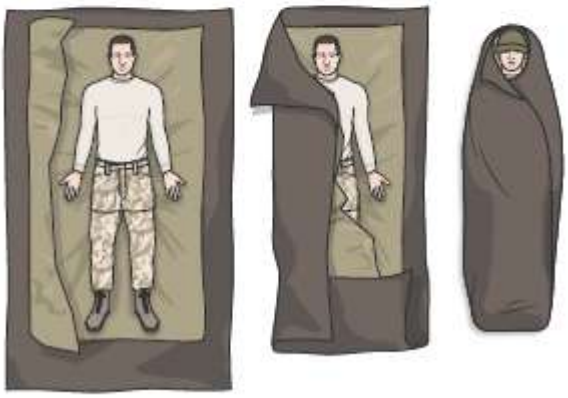
CONSIDER body substance isolation.
NOTE: If a Combat Lifesaver is available, direct them to assist.
NOTE: Ensure hemostasis, assess, and treat for hemorrhagic shock.

01 **MINIMIZE** the casualty's exposure to the elements.

02 **PLACE** insulation material between casualty and cold surface as soon as possible.

03 **KEEP DRY CLOTHING** and protective gear on or with the casualty.

04 **REMOVE WET CLOTHES** and replace with dry clothes/materials, if possible.



STEP 10 NOTE: **Do not** cover up the casualty's face.
STEP 10 NOTE: As soon as possible, upgrade any improvised vapor barrier to a well-insulated enclosure system as additional materials become available.

05 ***If using a hypothermia kit***, **REMOVE** the vapor barrier shell, open completely, and **PLACE** the casualty centered on the shell.

06 ***If commercial vapor barrier shell is not available***, **PLACE** the casualty centered on an impermeable vapor barrier (space blanket, survival blanket, plastic tarp, waterproof sleeping bag shell, body bag, etc.).

07 ***If an active warming device is available***, open the active warming device package, **REMOVE** the device, and **EXPOSE** to air (per manufacturer's guidance).

08 **APPLY** the active warming device on the casualty's anterior torso and under the arms in the axillae.
CAUTION: **Do not** place the active warming device directly on the skin to prevent burns.

09 If an active warming device is not available, **WRAP** passive warming materials (blanket, etc.) under and around the casualty, including the head.
CAUTION: Passive hypothermia prevention does not reverse the hypothermic process.

10 **WRAP** the entire vapor barrier shell (or other improvised impermeable vapor barrier materials) completely around the casualty, including the head and secure using tape if necessary.

11 **PROTECT** the casualty from further exposure to wind and precipitation while awaiting evacuation.

12 **MONITOR** the casualty closely for life-threatening conditions.

13 **DOCUMENT** all findings and treatments on a DD Form 1380 TCCC Casualty Card and attach to the casualty.

STEP 10 NOTE: As a planning factor, pre-stage an insulated hypothermia enclosure system with external active heating for transition from non-insulated hypothermia enclosure systems.

Treating Burns

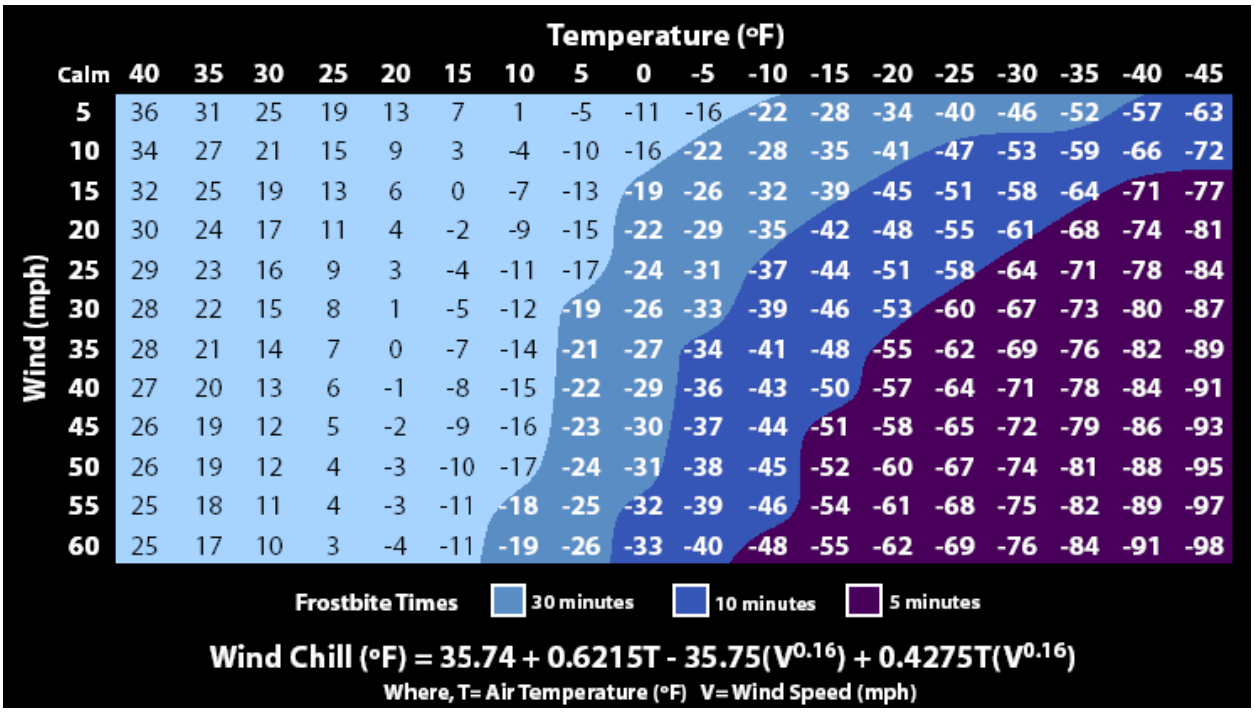
Burn injuries are a leading cause of morbidity that can result in devastating disability and poor quality of life for survivors. Flushing the burn area with twenty minutes of cool running water (ideally between 15°C and 25°C or 59°F and 77°F) within the first three hours (sooner is better) of burn injury significantly decreased the odds of patients requiring skin grafting and surgical intervention for wound management. If running water is unavailable, put a cool, clean wet cloth on the burn, or soak the burn in a cool water bath. Never use ice or ice water, as it can cause further tissue damage and frostbite.

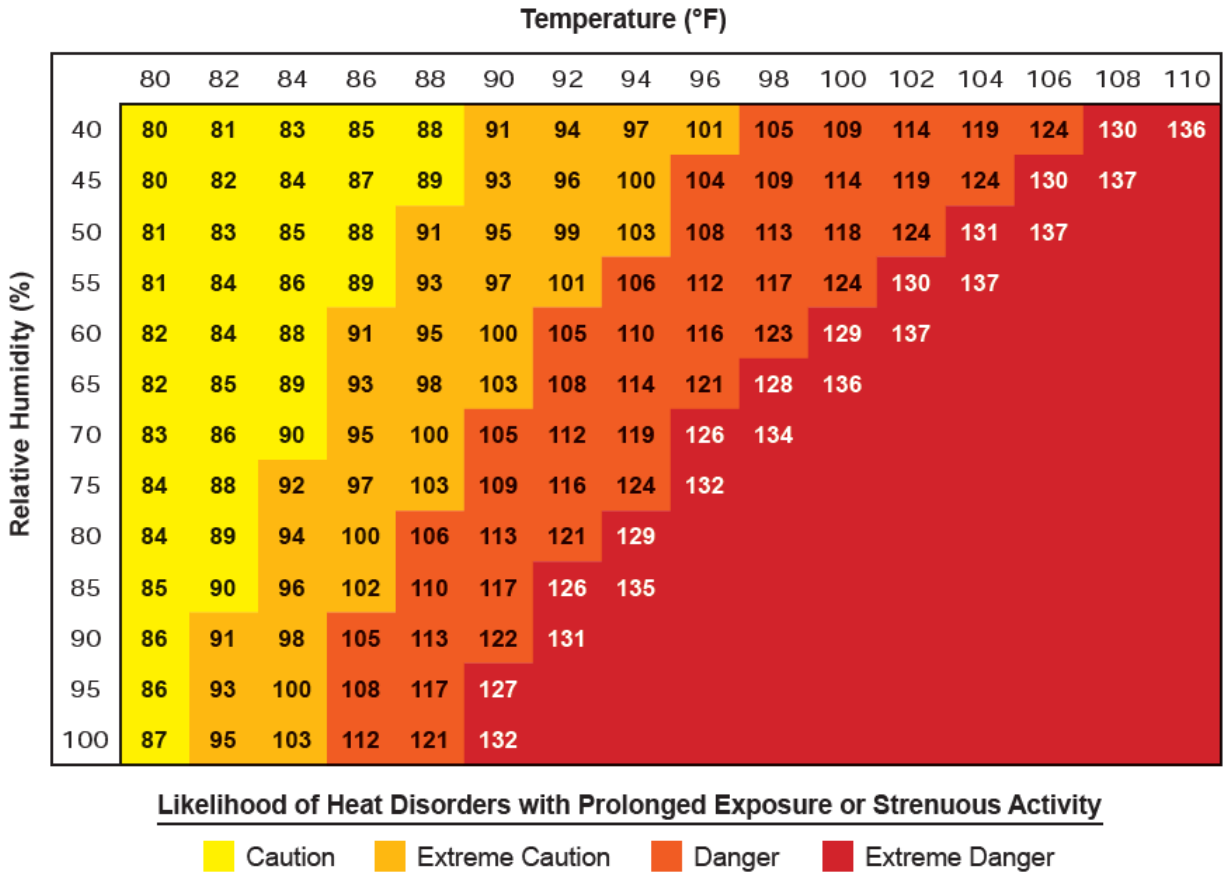
Remove rings or other tight items. Try to do this quickly and gently, before the burned area swells.

After cooling, cover the burn loosely with a clean, non-stick dressing (like plastic cling film) and keep the person warm.

For minor burns, you may put a thin layer of ointment, such as petroleum jelly or aloe vera, on the burn. This prevents drying of the burned area. The ointment does not need to have antibiotics in it. Some antibiotic ointments can cause an allergic reaction. Do not use cream, lotion, oil, cortisone, butter, or egg white.

For pain, take an over-the-counter pain medicine. These include acetaminophen (such as Tylenol), ibuprofen (such as Advil or Motrin), naproxen (such as Aleve), and aspirin. Follow the directions on the bottle. Do not give aspirin to children under age 2 years, or anyone 18 or younger who has or is recovering from chickenpox or flu symptoms.


Temperature (°F)
Calm 40 35 30 25 20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40 -45
Wind (mph)
5 36 31 25 19 13 7 1 -5 -11 -16 -22 -28 -34 -40 -46 -52 -57 -63
10 34 27 21 15 9 3 -4 -10 -16 -22 -28 -35 -41 -47 -53 -59 -66 -72
15 32 25 19 13 6 0 -7 -13 -19 -26 -32 -39 -45 -51 -58 -64 -71 -77
20 30 24 17 11 4 -2 -9 -15 -22 -29 -35 -42 -48 -55 -61 -68 -74 -81
25 29 23 16 9 3 -4 -11 -17 -24 -31 -37 -44 -51 -58 -64 -71 -78 -84
30 28 22 15 8 1 -5 -12 -19 -26 -33 -39 -46 -53 -60 -67 -73 -80 -87
35 28 21 14 7 0 -7 -14 -21 -27 -34 -41 -48 -55 -62 -69 -76 -82 -89
40 27 20 13 6 -1 -8 -15 -22 -29 -36 -43 -50 -57 -64 -71 -78 -84 -91
45 26 19 12 5 -2 -9 -16 -23 -30 -37 -44 -51 -58 -65 -72 -79 -86 -93
50 26 19 12 4 -3 -10 -17 -24 -31 -38 -45 -52 -60 -67 -74 -81 -88 -95
55 25 18 11 4 -3 -11 -18 -25 -32 -39 -46 -54 -61 -68 -75 -82 -89 -97
60 25 17 10 3 -4 -11 -19 -26 -33 -40 -48 -55 -62 -69 -76 -84 -91 -98
Frostbite Times 30 minutes 10 minutes 5 minutes
Wind Chill (°F) = 35.74 + 0.6215T - 35.75(V^0.16) + 0.4275T(V^0.16)
Where, T= Air Temperature (°F) V= Wind Speed (mph)


Temperature (°F)
80 82 84 86 88 90 92 94 96 98 100 102 104 106 108 110
Relative Humidity (%)
40 80 81 83 85 88 91 94 97 101 105 109 114 119 124 130 136
45 80 82 84 87 89 93 96 100 104 109 114 119 124 130 137
50 81 83 85 88 91 95 99 103 108 113 118 124 131 137
55 81 84 86 89 93 97 101 106 112 117 124 130 137
60 82 84 88 91 95 100 105 110 116 123 129 137
65 82 85 89 93 98 103 108 114 121 128 136
70 83 86 90 95 100 105 112 119 126 134
75 84 88 92 97 103 109 116 124 132
80 84 89 94 100 106 113 121 129
85 85 90 96 102 110 117 126 135
90 86 91 98 105 113 122 131
95 86 93 100 108 117 127
100 87 95 103 112 121 132
Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity
Caution
Extreme Caution
Danger
Extreme Danger

Work/Rest and Water Consumption Table

Applies to average sized, heat-acclimated Soldier wearing ACU, hot weather. (See TB MED 507 for further guidance.)

Easy Work	Moderate Work	Hard Work
• Weapon Maintenance • Walking Hard Surface at 2.5 mph, < 30 lb Load • Marksmanship Training • Drill and Ceremony • Manual of Arms	• Walking Loose Sand at 2.5 mph, No Load • Walking Hard Surface at 3.5 mph, < 40 lb Load • Calisthenics • Patrolling • Individual Movement Techniques, i.e., Low Crawl or High Crawl • Defensive Position Construction	• Walking Hard Surface at 3.5 mph, ≥ 40 lb Load • Walking Loose Sand at 2.5 mph with Load • Field Assaults

Heat Category	WBGT Index, F°	Easy Work		Moderate Work		Hard Work	
		Work/Rest (min)	*Water Intake (qt/hr)*	*Work/Rest (min)*	*Water Intake (qt/hr)*	*Work/Rest (min)*	*Water Intake (qt/hr)*
1	78° - 81.9°	NL	½	NL	¾	40/20 min	¾
2 (green)	82° - 84.9°	NL	½	50/10 min	¾	30/30 min	1
3 (yellow)	85° - 87.9°	NL	¾	40/20 min	¾	30/30 min	1
4 (red)	88° - 89.9°	NL	¾	30/30 min	¾	20/40 min	1
5 (black)	> 90°	50/10 min	1	20/40 min	1	10/50 min	1

- The work/rest times and fluid replacement volumes will sustain performance and hydration for at least 4 hrs of work in the specified heat category. Fluid needs can vary based on individual differences (± ¼ qt/hr) and exposure to full sun or full shade (± ¼ qt/hr).
- **NL** = no limit to work time per hr.
- **Rest** = minimal physical activity (sitting or standing) accomplished in shade if possible.
- ***CAUTION: Hourly fluid intake should not exceed 1½ qts.***

  Daily fluid intake should not exceed 12 qts.
- If wearing body armor, add **5°F** to WBGT index in humid climates.
- If doing Easy Work and wearing NBC (MOPP 4) clothing, add **10°F** to WBGT index.
- If doing Moderate or Hard Work and wearing NBC (MOPP 4) clothing, add **20°F** to WBGT index.

USAPHC
U.S. ARMY PUBLIC HEALTH COMMAND
http://phc.amedd.army.mil
1-800-222-9698

For additional copies, contact: U.S. Army Public Health Command Health Information Operations Division at (800) 222-9698 or USAPHC - Health Information Operations@apg.amedd.army. mil.
For electronic versions, see http://chppm-www.apgea.army.mil/heat. Distribution unlimited. Local reproduction is authorized.
CP-033-0811

Make Water Safe During an Emergency

After a disaster or emergency, tap water may not be safe to use. Always listen to your local authorities for specific advice.

Use bottled water for drinking, cooking, and brushing teeth if possible. If bottled water is not available, choose one of the following methods to make your water safe.

Water contaminated with harmful chemicals or toxins cannot be made safe by boiling, disinfecting, or filtering.

BOIL

This method will kill bacteria, viruses, and parasites.

Boiling water is the best method.

Boil your water for 1 minute.
At elevations above 6,500 feet, boil for 3 minutes. Let the water cool.

DISINFECT

This method will kill most viruses and bacteria.

Add 8 drops or a little less than 1/8 of a teaspoon of 5%-9% unscented household bleach to 1 gallon water.

For cloudy tap water, use 16 drops or ¼ teaspoon.

If you don't have household bleach, chlorine dioxide tablets or iodine can be used according to label instructions.

Add bleach to water. **Mix well.** **Wait at least 30 minutes before using.**

FILTER

This method can remove parasites.

Most portable water filters do not remove bacteria or viruses.

Choose a water filter labeled to remove parasites, and follow manufacturer's instructions. Filtered water might need additional treatment to be safe.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

United States Environmental Protection Agency

EMERGENCY DISINFECTION OF DRINKING WATER

In an emergency situation where regular water service has been interrupted – like a hurricane, flood, or water pipe breakage – local authorities may recommend using only bottled water, boiled water, or disinfected water until regular water service is restored. The instructions below show you how to boil and disinfect water to kill most disease-causing microorganisms that may be present in the water. However, boiling or disinfection will not destroy other contaminants, such as heavy metals, salts, and most other chemicals.

ONLY USE WATER THAT HAS BEEN PROPERLY DISINFECTED FOR DRINKING, COOKING, MAKING ANY PREPARED DRINK, WASHING DISHES, AND FOR BRUSHING TEETH.

- ❑ Use **bottled water** or water you have properly prepared and stored as an emergency water supply.
- ❑ **Boil water**, if you do not have bottled water. Boiling is sufficient to kill pathogenic bacteria, viruses and protozoa (WHO, 2015).
  - If water is cloudy, let it settle and filter it through a clean cloth, paper towel, or coffee filter.
  - Bring water to a rolling boil for at least one minute. At altitudes above 5,000 feet (1,000 meters), boil water for three minutes.
  - Let water cool naturally and store it in clean containers with covers.
  - To improve the flat taste of boiled water, add one pinch of salt to each quart or liter of water, or pour the water from one clean container to another several times.

- ❑ **Disinfect water using household bleach**, if you can't boil water. Only use regular, unscented chlorine bleach products that are suitable for disinfection and sanitization as indicated on the label. The label may say that the active ingredient contains 6 or 8.25% of sodium hypochlorite. Do not use scented, color safe, or bleaches with added cleaners.
  - If water is cloudy, let it settle and filter it through a clean cloth, paper towel, or coffee filter.
  - Locate a clean dropper from your medicine cabinet or emergency supply kit.
  - Locate a fresh liquid chlorine bleach or liquid chlorine bleach that is stored at room temperatures for less than one year.
  - Use the table on the next page as a guide to decide how much bleach you should add to the water, for example, add 8 drops of 6 % bleach or 6 drops of 8.25% bleach to each gallon of water. Double the amount of bleach if the water is cloudy, colored, or very cold.
  - Stir and let stand for 30 minutes. The water should have a slight chlorine odor. If it doesn't, repeat the dosage and let stand for another 15 minutes before use.
  - If the chlorine taste is too strong, pour the water from one clean container to another and let it stand for a few hours before use.

Volume of Water	Amount of 6% Bleach to Add†	Amount of 8.25% Bleach to Add†
1 quart/liter	2 drops	2 drops
1 gallon	8 drops	6 drops
2 gallons	16 drops (1/4 tsp)	12 drops (1/8 tsp)
4 gallons	1/3 tsp	1/4 tsp
8 gallons	2/3 tsp	1/2 tsp

† Bleach may contain 6 or 8.25% sodium hypochlorite

ADDITIONAL WATER GUIDANCE FOR EMERGENCIES

Prepare and store an emergency water supply. Visit the Federal Emergency Management Agency (FEMA) website www.ready.gov/managing-water for additional guidance on preparing and storing an emergency water supply.

Look for other sources of water in and around your home. Although bottled water is your best choice, you may be able to find other sources of water by melting ice cubes or draining your hot water tank or pipes.

You can also use river or lake water. It is generally better to use flowing water than still, stagnant water. However, do not use water with floating material in it or water that has a dark color or questionable odor.

Regardless of the source, treat the water by following the instructions on the previous page.

If you have a well on your property that has been flooded, make sure to disinfect and test the well water after the flood. Contact your state or local health department for advice or go to water.epa.gov/drink/info/well/whatdo.cfm.

Consider how the water looks and how to filter it if needed. Disinfection does not work as well when water is cloudy or colored. If water is cloudy, let it settle. Then filter the water through a clean cloth, paper towel, or coffee filter. Store the settled and filtered water in clean containers with covers.

OTHER DISINFECTION METHODS

If you don't have liquid bleach, you can use one of the other disinfection methods described below.

- **Granular calcium hypochlorite**. The first step is to make a chlorine solution that you will use to disinfect your water. For your safety, do it in a ventilated area and wear eye protection. Add one heaping teaspoon (approximately ¼ ounce) of high-test granular calcium hypochlorite (HTH) to two gallons of water and stir until the particles have dissolved. The mixture will produce a chlorine solution of approximately 500 milligrams per liter. To disinfect water, add one part of the chlorine solution to each 100 parts of water you are treating. This is about the same as adding 1 pint (16 ounces) of the chlorine solution to 12.5 gallons of water. If the chlorine taste is too strong, pour the water from one clean container to another and let it stand for a few hours before use. CAUTION: HTH is a very powerful oxidant. Follow the instructions on the label for safe handling and storage of this chemical.
- **Common household iodine (or "tincture of iodine")**. You may have iodine in your medicine cabinet or first aid kit. Add five drops of 2% tincture of iodine to each quart or liter of water that you are disinfecting. If the water is cloudy or colored, add 10 drops of iodine. Stir and let the water stand for at least 30 minutes before use.
- **Water disinfection tablets**. You can disinfect water with tablets that contain chlorine, iodine, chlorine dioxide, or other disinfecting agents. These tablets are available online or at pharmacies and sporting goods stores. Follow the instructions on the product label as each product may have a different strength.

MORE INFORMATION

World Health Organization (WHO), 2015. *Technical Briefing on Boil Water*.

Safe Drinking Water Hotline 1-800-426-4791
water.epa.gov/drink/hotline

(Source: Emergency Disinfection of Drinking Water September 2017, EPA 816-F-15-003)

Water treatment while hiking, camping, and traveling

When visiting places with unknown water quality, you may need to treat water to make sure it's safe to drink. **Boiling water is the most reliable way to kill germs.** If you cannot boil your water, the next best option is to use a filter (especially if water is cloudy) and then use another treatment method. Follow instructions on the treatment product's label, including the contact time for disinfectants. This guide can help you decide which treatment method or combination of methods to use to make your water safe to drink.

TYPE OF GERM	BOIL (for 1 min., or 3 mins. at elevations above 6,500 feet)	FILTER	PURIFIER	CHLORINE TREATMENT (disinfectant)	IODINE (disinfectant)	CHLORINE DIOXIDE (disinfectant)	COMBINING FILTER AND DISINFECTANT	UV LIGHT USED IN CLEAR WATER
BACTERIA *(such as Campylobacter, Salmonella, Shigella, E. coli)*	✓	✓ 0.3 micron or smaller filter	✓	✓	✓	✓	✓ 0.3 micron or smaller filter, plus disinfectant	✓
VIRUSES *(such as norovirus, hepatitis A, enterovirus, rotovirus)*	✓	✗	✓	✓	✓	✓	✓	✓
PARASITE *Giardia*	✓	✓ Filter certified for "cyst" and "oocyst" reduction	✓	!	!	✓	✓ Filter certified for "cyst" and "oocyst" reduction, plus chlorine dioxide	✓
PARASITE *Cryptosporidium*	✓	✓ Filter certified for "cyst" and "oocyst" reduction	✓	✗	✗	!	✓ Filter certified for "cyst" and "oocyst" reduction, plus chlorine dioxide	✓

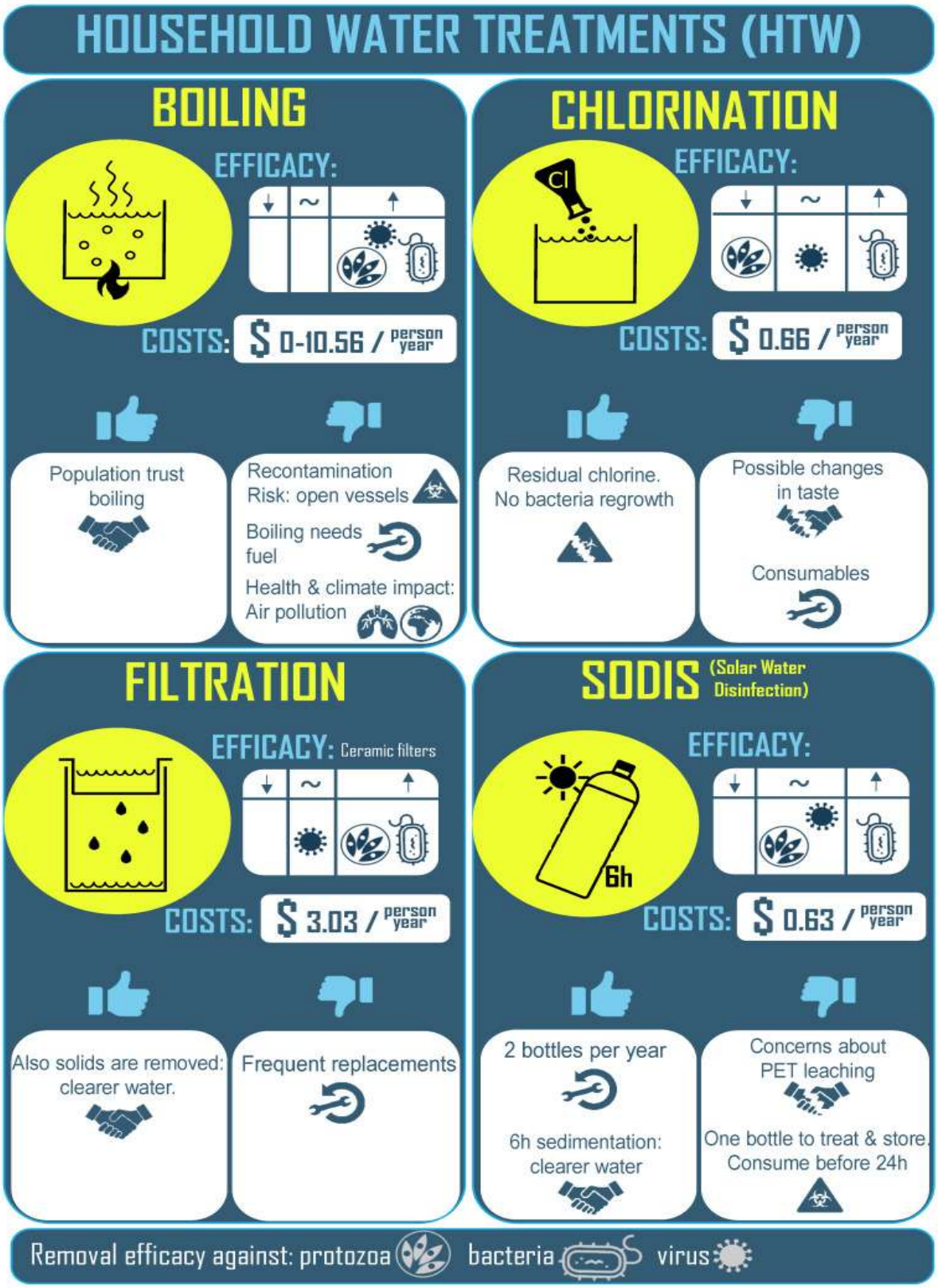
Centers for Disease Control and Prevention
National Center for Emerging and Zoonotic Infectious Diseases

Learn more: www.cdc.gov/healthywater/drinking/travel/backcountry_water_treatment.html

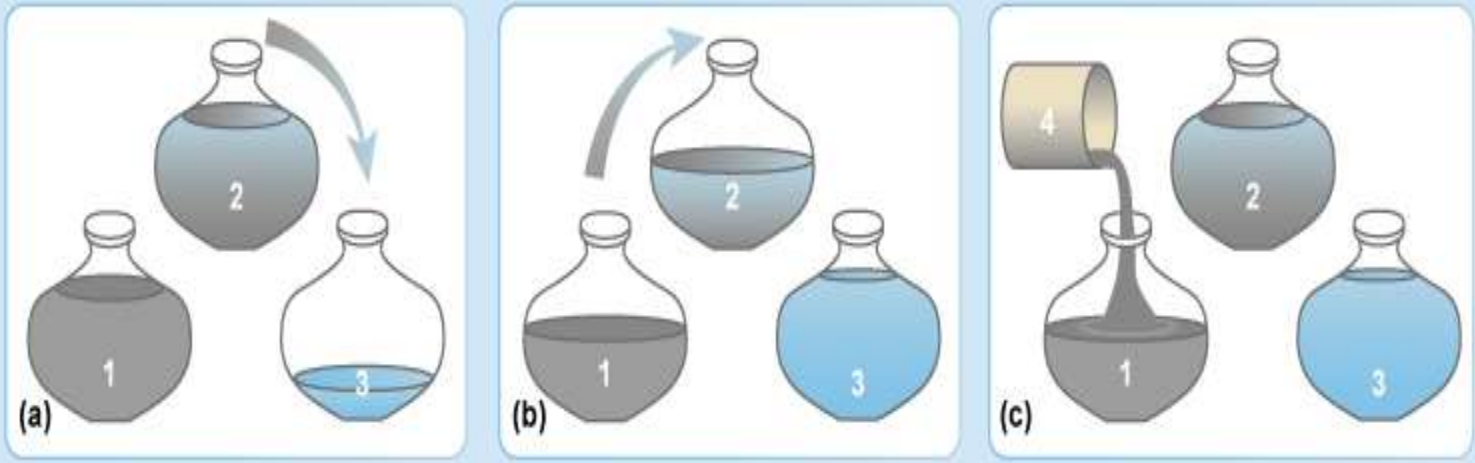
✓ **EFFECTIVE**—will remove or kill this type of germ

! **SOMEWHAT EFFECTIVE**—may remove some germs of this type, but water could still be unsafe

✗ **NOT EFFECTIVE**—will not remove or kill this type of germ


HOUSEHOLD WATER TREATMENTS (HTW)
BOILING
EFFICACY:
COSTS: $ 0-10.56 / person year
Population trust boiling
Recontamination Risk: open vessels
Boiling needs fuel
Health & climate impact: Air pollution
CHLORINATION
Cl
EFFICACY:
COSTS: $ 0.66 / person year
Residual chlorine. No bacteria regrowth
Possible changes in taste
Consumables
FILTRATION
EFFICACY: Ceramic filters
COSTS: $ 3.03 / person year
Also solids are removed: clearer water.
Frequent replacements
SODIS (Solar Water Disinfection)
EFFICACY:
6h
COSTS: $ 0.63 / person year
2 bottles per year
6h sedimentation: clearer water
Concerns about PET leaching
One bottle to treat & store. Consume before 24h
Removal efficacy against: protozoa bacteria virus

The three-pot treatment system



Drinking-water: always take from pot 3. This water has been stored for at least two days, and the quality has improved. Periodically this pot will be washed out and may be sterilized by scalding with boiling water.

Each day when new water is brought to the house:

(a) Slowly pour water stored in pot 2 into pot 3. Wash out pot 2.

(b) Slowly pour water stored in pot 1 into pot 2. Wash out pot 1.

(c) Pour water collected from the source (bucket 4) into pot 1. You may wish to strain it through a clean cloth.

Using a flexible pipe to siphon water from one pot to another disturbs the sediments less than pouring.

Water Clarification Using Alum

1. Add a pinch of alum to each gallon of water.

2. Mix well, stir occasionally for 30 minutes, and then allow 30 to 60 minutes for settling.

3. The water should clear; if it does not, add another pinch of alum.

4. Decant or pour the water through a paper filter to remove clumps of flocculate.

5. Granular activated charcoal (GAC) removes organic pollutants, chemicals, and radioactive particles by adsorption. This improves the color, taste, and smell of the water. Although some microorganisms adhere to GAC or become trapped in charcoal filters, GAC does not remove all microorganisms, so it does not disinfect.

6. GAC can be used to remove halogens (iodine, chlorine) after disinfection.

7. If GAC is used to remove iodine or chlorine, wait until after the required contact time for disinfection before running water through charcoal or adding charcoal to the water.

8. Filters that use iodine resins, followed by GAC, rely on a different dynamic for disinfection.

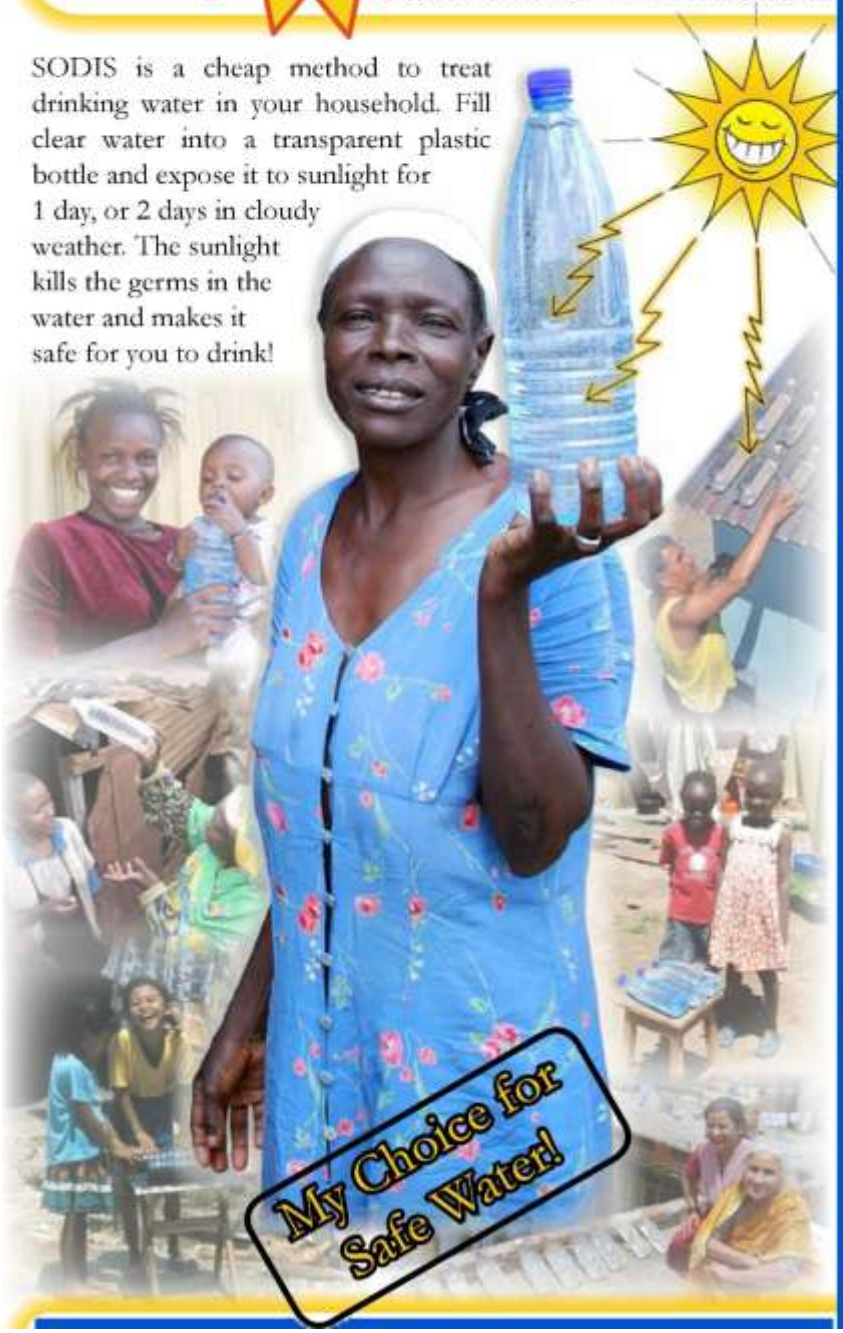
9. Although residual-free iodine is largely removed by GAC, iodine is thought to remain bound to microorganisms following the resin pass-through and GAC pass-through phases.

10. The necessary contact time for iodine resins is not absolutely determined, but it is clearly less than that required with standard iodine solutions. (PMCID: PMC7310936)

SODIS

Solar Water Disinfection

SODIS is a cheap method to treat drinking water in your household. Fill clear water into a transparent plastic bottle and expose it to sunlight for 1 day, or 2 days in cloudy weather. The sunlight kills the germs in the water and makes it safe for you to drink!



SODIS Application

Use a clean plastic bottle that is...

- ✔ transparent
- ✔ 3 litres max.

1

Wash the bottle well the first time you use it

2

Fill the bottle with clear water up to the brim

3

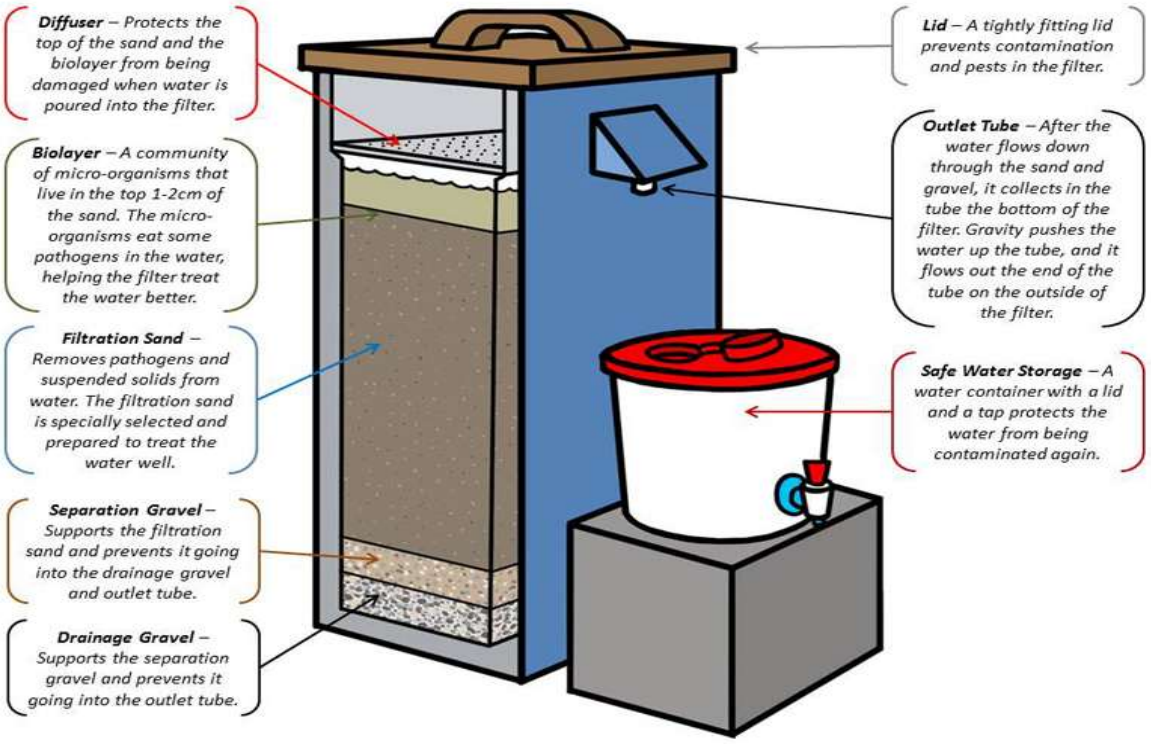
Expose the bottle to sunlight for...

1 full day in clear weather

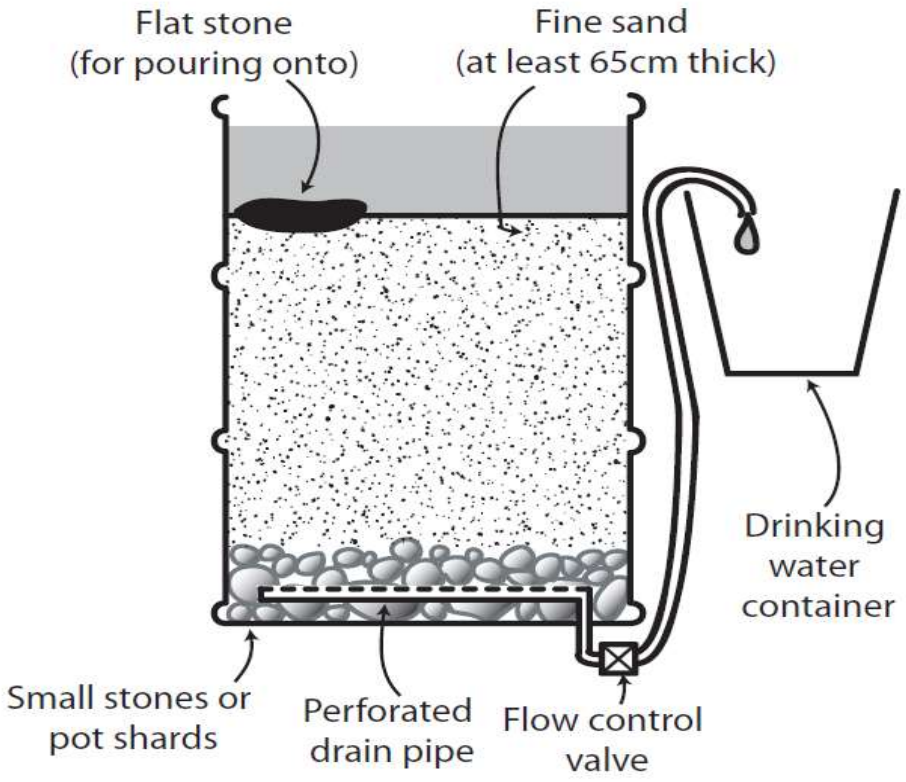
2 consecutive days in cloudy weather

4

Enjoy your safe SODIS water!


Diffuser – Protects the top of the sand and the biolayer from being damaged when water is poured into the filter.
Biolayer – A community of micro-organisms that live in the top 1-2cm of the sand. The micro-organisms eat some pathogens in the water, helping the filter treat the water better.
Filtration Sand – Removes pathogens and suspended solids from water. The filtration sand is specially selected and prepared to treat the water well.
Separation Gravel – Supports the filtration sand and prevents it going into the drainage gravel and outlet tube.
Drainage Gravel – Supports the separation gravel and prevents it going into the outlet tube.
Lid – A tightly fitting lid prevents contamination and pests in the filter.
Outlet Tube – After the water flows down through the sand and gravel, it collects in the tube the bottom of the filter. Gravity pushes the water up the tube, and it flows out the end of the tube on the outside of the filter.
Safe Water Storage – A water container with a lid and a tap protects the water from being contaminated again.

Slow sand filter



> Sand filters

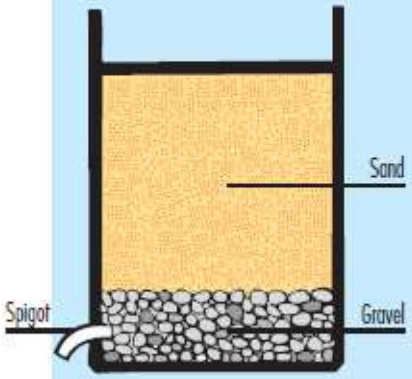
> Pre-treatment

Filtration through sand is a fast and simple pre-treatment option that reduces the amount of dirt in water and makes disinfection more effective.

Users pour water from one container through a container of sand with gravel and an opening or spigot at the bottom. The water then flows into a storage container.

Pre-treatment through sand has positive and negative aspects.

- ▲ This method is simple and fast to use.
- ▲ It is effective at removing dirt and some germs that cause disease. This can make the other methods of treating water work better.
- ▲ It is inexpensive if the sand and containers are available locally
- ● It requires three containers and a spigot.



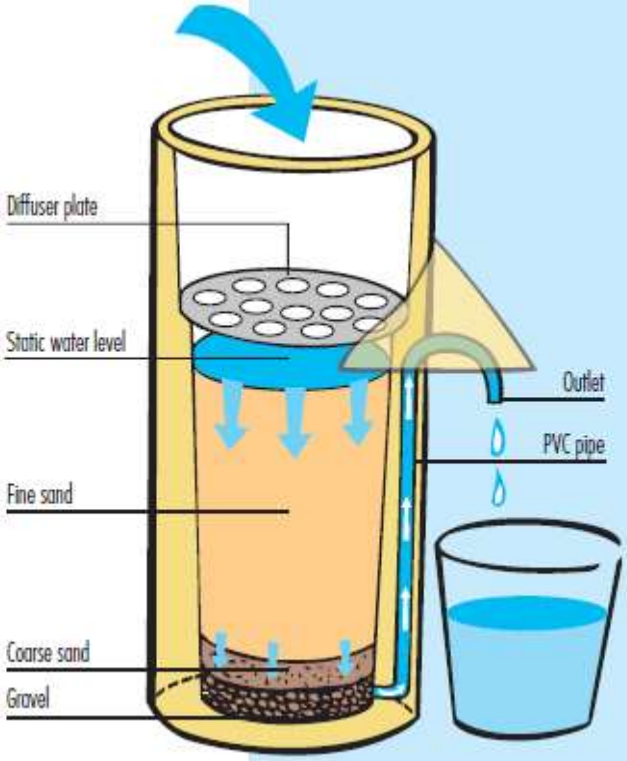
> Biosand filters

Although not commonly used in emergencies, biosand filters are an effective and long lasting method of household water treatment. Biosand filters filter water through the sand AND the biological material that grows on the top of the filter. The filter is cleaned when it becomes clogged.

Because the biological layer needs time to grow, the filter will not treat water properly when it is first put into use and after cleanings.

Although these filters are simple to use, they require hands on training when they are distributed. Details on construction and maintenance of these filters can be found in Additional resources.

- ▲ If properly maintained, this filter can treat water for a long time
- ● It can take a great deal of time to treat water, especially when the water is very dirty.
- ● There is no residual effect of disinfection, the clean water container must be covered to protect against contamination.
- ● These filters need regular maintenance and require more training and follow up.



CAWST (Centre for Affordable Water and Sanitation Technology) (https://www.cawst.org/) is a Canadian non-profit organization that developed and promotes the Biosand filter (BSF) as a low-cost, household-level water treatment technology.

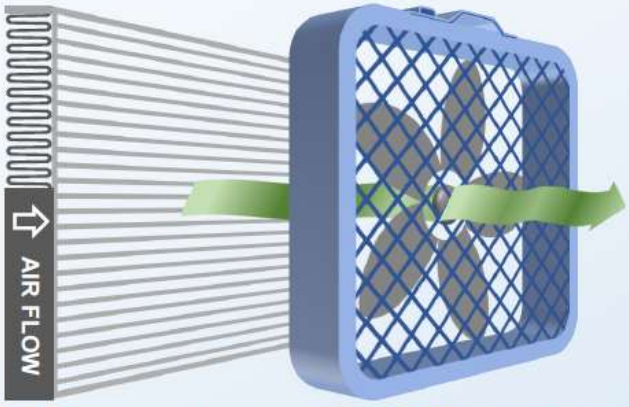
H2gO Purifier (https://aquaresearch.com/h2go-purifier/) is a handheld electrolytic chlorine generator designed by Aqua Research, Inc., that produces chlorine through electrolysis using water and common salt. It is certified by the World Health Organization (WHO) as meeting its most basic classification for Household Water Treatment Systems (HWTS), providing Targeted protection against bacteria and viruses only based on a desk review of existing laboratory data.

The **H2gO GLOBAL** is an ideal device for those who will be treating generally clear water or who are very sensitive to the taste of chlorine in the water. The GLOBAL kills viruses and bacteria with a single 2.5 mg/L dose, but requires a double dose to kill Giardia and Cryptosporidium. The H2gO GLOBAL was designed to meet World Health Organization (WHO) standards as defined in the Household Water Treatment Scheme (HWTS). People in low- and middle-income countries are often at higher risk for viral and bacterial contamination, and they find the lower dose more palatable.

The **H2gO PRIME kills** viruses, bacteria, Giardia, and Cryptosporidium with a single 5 mg/L dose and is good for those who want maximum disinfection efficacy with a single punch or who will frequently be treating more turbid waters. The PRIME was designed for the military and outdoor recreation market, based on the EPA Guide Standard & Protocol for Testing Microbiological Water Purifiers and complying with the U.S. Army's TB MED 577 dosage guidelines of 5 mg/L.

DIY Air Cleaner to Reduce Wildfire Smoke Indoors

Materials



20" X 20" air filter
Suggested rating: MERV 13

20" X 20" box fan
Only use certified fans with UL or ETL marking (2012 model or newer)

Clamps

or

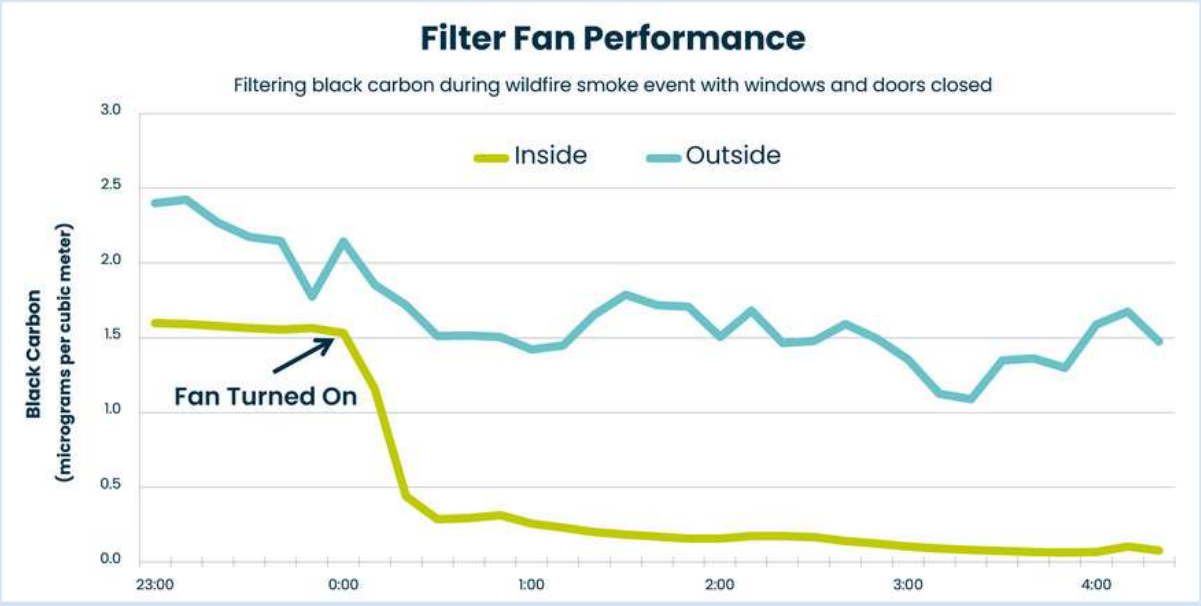
Duct Tape

or

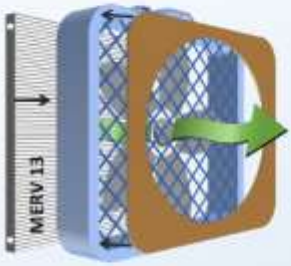
Bungee Cords

Assembly

1. Attach the air filter to the back of the box fan using either clamps, duct tape or bungee cords.
2. Check the filter for the direction of the air flow (marked on the side of the filter).
3. Replace filters when dirty.



DIY Air Cleaner Designs: Beyond the Basic

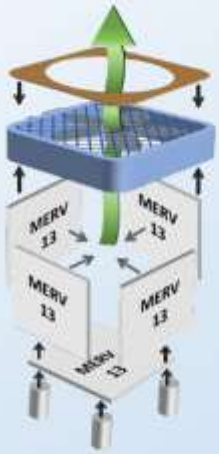


Good

Basic Supplies:
- 20" x 20" box fan
- 20" x 20" x 1" or 4" MERV 13 air filter
- 20" x 20" cardboard shroud (cutout the size of the fan blades)
- Clamps, duct tape, or bungee cords

Better

Additional Supplies:
- Two - MERV 13 air filters
- Triangle cardboard cutout for base on top



Best

Additional Supplies:
- Four or five - MERV 13 air filters
- If using five filter design, use leg supports (e.g., blocks) to allow airflow through bottom

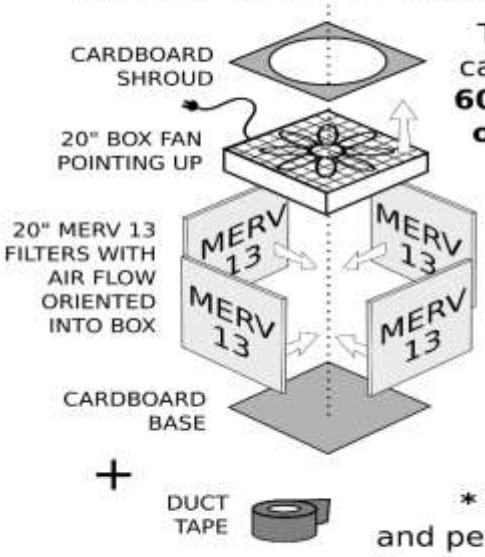
Ways to Improve Effectiveness:
- Add a cardboard shroud (no-cost improvement)
- Use thicker filters (4" rather than 1" MERV 13 filters)
- Use multiple filters (2-5 filter designs)

Key Reminders:
- Only use certified fans with UL or ETL marking (2012 model or newer)
- Keep extra filters on hand
- Replace filters when dirty

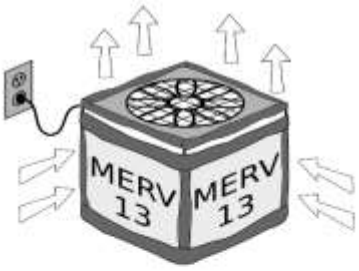
THE CORSI / COMPARETTO / ROSENTHAL*

DIY AIR PURIFIER

A 'box' made out of **MERV-13 filters** and a **box fan** can remove about **85%** of the airborne particulates that carry **COVID-19 virus**.



This 'DIY air purifier' design can deliver the equivalent of **600 cubic feet per minute of virus-free air** to a room for **less than $175 USD**.



* For build guides, citations, and performance reviews, search the web for '**Corsi DIY air filter**' or '**Comparetto cube**' -- or visit:

edgecollective.io/airbox

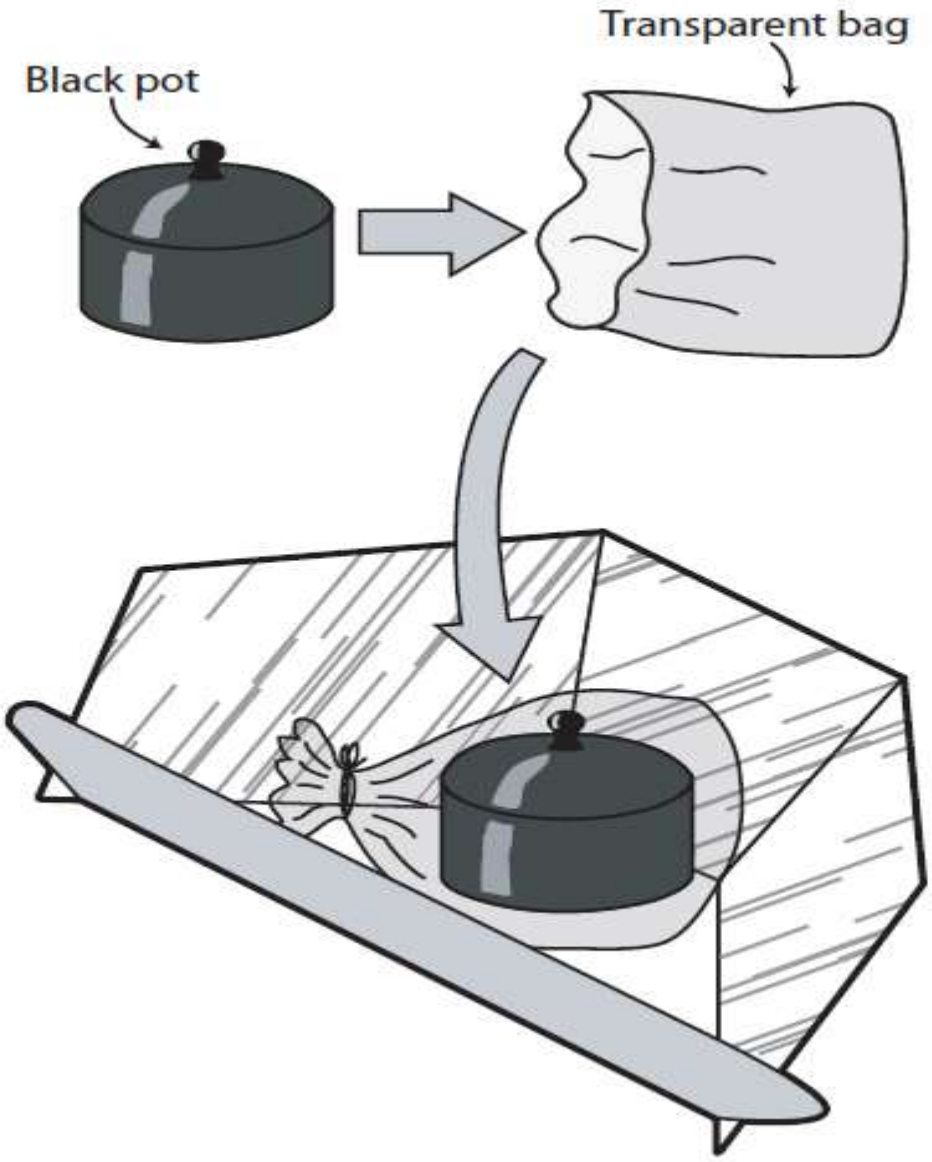
Zeer Pot Evaporative Cooling

Zeer pot evaporative cooling is a traditional, electricity-free cooling method that uses the principle of evaporative cooling to lower temperatures inside an inner container. It consists of two clay pots: a smaller pot placed inside a larger one, with the space between them filled with wet sand or soil. As water evaporates from the outer surface of the pots, it draws heat from the inner pot, reducing its internal temperature by up to 12°C in dry environments.

Effectiveness: In low-humidity regions like deserts (e.g., Saudi Arabia), Zeer pots can achieve significant cooling (up to 12°C reduction), making them effective for storing temperature-sensitive items like insulin or perishable foods.

Limitations: In high-humidity environments (e.g., Southern Thailand, 78% RH), cooling efficacy drops significantly—only about 2°C reduction—due to reduced evaporation. (PMID: 24425938)

Solar Cooking



Any day the sun shines 3 to 4 hours between 10 a.m. and 3 p.m., you can cook a meal in a solar cooker made from simple supplies you may already have around the house. You can use this solar cooker for fun, as an experiment, in case of a gas or electricity outage, or to save energy. The principles involved include collecting the sun's rays and concentrating them on a dark surface, such as a dark, thin metal pan, and trapping the heat inside the pan. To collect the sun's rays, you need a bowl shaped

container (a cardboard box in this case) lined with reflective material, such as aluminum foil or mylar.

1. Supplies

The supplies you will need to construct and cook with a solar cooker should cost approximately $40, less if you already have some of the materials listed below in your home or garage.

- Two cardboard boxes, one for a solar cooker and one to cut extra pieces to affix to the solar cooker. A 12″ x 12″ x 12″ box or slightly larger works best for the solar cooker.
- A Mylar emergency foil blanket or roll of heavy duty aluminum foil.
- Glue or a spray adhesive.
- Roll of aluminum foil tape.
- Scissors and a utility knife.
- A glass cake dome.
- Two dark grey or black 9″ round pans.
- 4 medium to large sized binder clips

2. Prepare the Box

a. Cut the top flaps off and slit the four corners down on the box that will be your solar cooker.

b. Cut four triangle-shaped sections from the extra cardboard box. These sections will be attached to each corner of the solar cooker later in the process to form a bowl shape.

3. Glue Mylar to Box & Triangles

a. Use scissors or a utility knife to cut pieces from the Mylar to glue to the box. Use glue or spray adhesive to attach the Mylar to the solar cooker. Leave a 1/2 inch space around the edges so the aluminum tape can better adhere to the box. Make sure the Mylar is glued flat to the box with no air bubbles.

b. Attach Mylar to each of the triangle pieces you cut out earlier. Again, leave a 1/2 inch space around the edges for the tape.

4. Assemble and Start Cooking

a. Use aluminum foil tape to attach the triangles to one side of each corner of the box. Then tape around all edges of the box.

b. Use binder clips to clamp the non-affixed side of each triangle to the opposite edge. Assembly is done!

c. Place your solar cooker outside, on the ground or a table, on a sunny day between 10 a.m. - 3 p.m. Stack the two 9" round pans on top each other, as shown in the picture above, inside the cake dome, with your food (pot roast or cookie dough, for example) placed in the bottom pan. The Mylar will collect the sun's rays and concentrate the heat inside the pans. The cake dome will prevent the heat from escaping and, because it's raised off the ground, allow cooking on all sides of the pans. Allow double the time required of a conventional gas or electric oven to cook food in the solar cooker. CAUTION: The pans will get very hot. Use oven mits when removing them from the cooker to avoid burning your hands.

World Health Organization – Patient Primary Care Checklist

The Primary Care Checklist summarizes ten key components of the patient encounter and encompasses the "5C's of primary care": first contact accessibility, continuity, coordination, comprehensiveness and person-centeredness. It is intended to guide health workers in taking a structured systematic approach to a longitudinal primary care visit and allow flexibility to address individual needs.

Consider the following:

1. Discuss the main reason for the visit
2. Check for emergency signs & symptoms
3. Document vital signs
4. Review any healthcare interaction since last visit
5. Discuss social and other factors that influence health
6. Review allergies, medications and any related concerns
7. Do a relevant physical examination
8. Discuss diagnoses and update the problem list
9. Discuss healthy choices, prevention & immunizations
10. Discuss & document follow-up, including when to seek urgent care

1. **Discuss the main reason for this visit**: The way a person expresses their reason for a visit provides critical information for a primary care encounter.

2. **Check for emergency signs & symptoms**: Early recognition of life-threatening illness or injury is essential to reduce morbidity and mortality. Every person should be evaluated for danger signs and symptoms at the beginning of each encounter. If present, initiate appropriate interventions and arrange emergency transfer.

3. **Document vital signs**: Checking and documenting vital signs is important and should be done at every clinical encounter when relevant. Vital signs should include respiratory rate, heart rate, blood pressure, temperature, and oxygen saturation (where available).

4. **Review any healthcare interaction since last visit**: This includes any interim visits, home visits, pharmacy consultations, encounters with traditional providers, emergency unit visits, hospital admissions or referral follow-ups.

5. **Discuss social and other factors that influence health**: Social factors like housing, work, education, and access to resources impact health. Identify any challenges that affect a person's ability to manage their health and address barriers to care.

6. **Review allergies, medications and any related concerns**: It is important to know about all medications that people are taking (including traditional therapies) and to understand if they are taking them as prescribed. Ask specifically about barriers to obtaining medicines and any side-effects.

7. **Do a relevant physical examination**: This may include a comprehensive or targeted exam depending on the reason for the encounter. Every clinical encounter should include some type of physical examination.

8. **Discuss diagnoses and update the problem list**: Keeping an up-to-date problem list is essential to effective primary care. This should include current and new diagnoses, specific health or social issues, and health maintenance interventions. This list can be rapidly reviewed at every visit.

9. **Discuss healthy choices, prevention & immunizations**: Specific promotive and preventive interventions are indicated across the life course and in association with specific conditions and contexts. This should include relevant vaccines, counselling and screening tests.

10. **Discuss & document follow-up, including when to seek urgent care**: Follow-up instructions should be explicitly discussed and documented. This should include any planned appointments or referrals and specific instructions on when to seek urgent care. Effective documentation improves continuity and coordination of care and enhances patient safety. Every visit should conclude with written or electronic documentation.

9-Line MEDEVAC REQUEST

MEDEVAC REQUEST FORM GTA 08-01-004

LINE	ITEM	EVACUATION REQUEST MESSAGE
1	Location of Pickup Site.	
2	Radio Frequ., Call Sign, & Suffix.	
3	No. of Patients by Precedence.	
4	Special Equipment Required.	
5	Number of Patients by Type.	
6	Security of Pickup Site (Wartime).	
6	Number and Type of Wound, Injury, or Illness (Peacetime).	
7	Method of Marking Pickup Site.	
8	Patient Nationality and Status.	
9	NBC Contamination (Wartime).	
9	Terrain Description (Peacetime).	

LINE ITEM	EXPLANATION
1. Location of Pickup Site.	Encrypt grid coordinates. When using *DRYAD Numeral Cipher, the same SET line* will be used to encrypt grid zone letters and coordinates. To preclude misunderstanding, a statement is made that grid zone letters are included in the message (unless unit SOP specifies its use at all times).
2. Radio Frequency, Call Sign, Suffix.	Encrypt the frequency of the radio at the pickup site, *not* a relay frequency. The call sign (and suffix if used) of person to be contacted at the pickup site may be transmitted in the clear.
3. No. of Patients by Precedence.	Report only applicable info & encrypt brevity codes. A = Urgent, B = Urgent-Surg, C = Priority, D = Routine, E = Convenience. (If 2 or more categories reported in same request, insert the word "break" btwn. each category.)
4. Spec Equipment.	Encrypt applicable brevity codes. A = None, B = Hoist, C = Extraction equipment, D = Ventilator.
5. No. of Patients by Type.	Report only applicable information and encrypt brevity code. If requesting MEDEVAC for both types, insert the word *"break"* between the litter entry and ambulatory entry: L + # of Pnt -Litter; A + # of Pnt - Ambul (sitting).
6. Security Pickup Site (Wartime).	N = No enemy troops in area, P = Possibly enemy troops in area (approach with caution), E = Enemy troops in area (approach with caution), X = Enemy troops in area (armed escort required).
6. Number and type of Wound, Injury, Illness (Peacetime).	Specific information regarding patient wounds by type (gunshot or shrapnel). Report serious bleeding, along with patient blood type, if known.
7. Method of Marking Pickup Site.	Encrypt the brevity codes. *A* = Panels, *B* = Pyrotechnic signal, *C* = Smoke Signal, *D* = None, *E* = Other.
8. Patient Nationality and Status.	Number of patients in each category need not be transmitted. Encrypt only applicable brevity codes. A = US military, B = US civilian, C = Non-US mil, D = Non-US civilian, E = EPW.
9. NBC Contamination, (Wartime).	Include this line only when applicable. Encrypt the applicable brevity codes. N = nuclear, B = biological, C = chemical.
9. Terrain Description (Peacetime).	Include details of terrain features in and around proposed landing site. If possible, describe the relationship of site to a prominent terrain feature (lake, mountain, tower).

PATIENT IDENTIFICATION		TRANSPORT INFORMATION		HISTORY	
Name:	Service:	Date :	On Scene :	S/S:	
SSN:	Rank:	Incident :	Recovered :	ALLERGIES:	LMP:
DOB:	Age:	Alert :	Delivered :	MEDICATIONS:	
Unit:	Sex:	Launch:	MTF:		

☐U.S. Military ☐U.S. Civilian ☐Non-U.S. Mil ☐Non-U.S. Civ ☐EPW

MECHANISM OF INJURY/CHIEF COMPLAINT/TRANSFER PATIENT DIAGNOSIS

AIRWAY		BREATHING		CIRCULATION		
Assessment	Treatment	Assessment	Treatment	Assessment		Treatment
☐Patent/Normal	OPA:	☐Adequate	☐NRB	Pulse:		
	NPA:	☐Inadequate	☐NC	☐Normal	☐Weak	☐ECG:
☐Obstructed	ETT Size:	☐Bilateral	☐BVM	☐Bounding	☐Absent	☐CPR:
	NT Size:	☐ R ☐ L	☐Ventilator	Skin:		
	Suction: _____ ml	☐Absent	O_2 ___ LPM	☐Hot	☐Warm	☐Dry
Other:		Other:		☐Cool	☐Moist	

GLASGOW COMA SCALE

Eye Opening	Verbal Activity	Motor Activity
☐4 - Spontaneous	☐5 – Oriented	☐6 – Obeys Command
☐3 – To Command	☐4 – Confused	☐5 – Localized Pain
☐2 – To Pain	☐3 – Inappropriate	☐4 – Withdraws to Pain
☐1 - None	☐2 – Incomprehensive	☐3 – Flexion to Pain
	☐1 - None	☐2 – Extension to Pain
GCS Total:	Time:	☐1 - None

CID/Spine Immobilization Type:

Bleeding: ☐None ☐Uncontrolled ☐Dressing ☐Controlled ☐Quick Clot ☐Tourniquet

Shock: ☐Position ☐Blankets ☐IV ☐P.A.S.G.

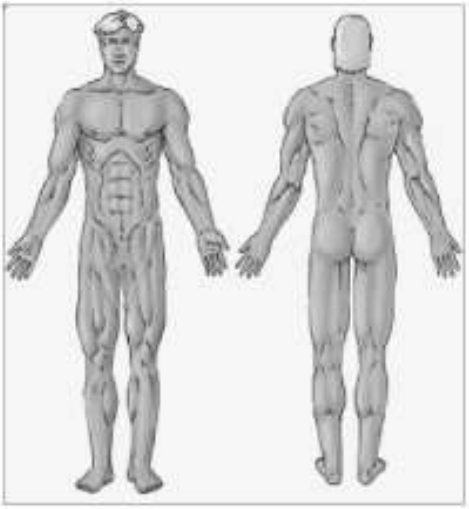
VITAL SIGNS

TIME:						
BP:						
PULSE:						
RESP:						
$S_pO2\%$:						
TEMP:						
ECG:						

MEDICATION	DOSE	ROUTE	TIME
1.			
2.			
3.			
4.			
5.			
6.			
7.			

NARRATIVE

1. Deformities 5. Burns 9. IV/Hep-lock
2. Contusions 6. Tenderness 10. GSW
3. Abrasions 7. Lacerations 11. Amputation
4. Puncture 8. Swelling 12. Sutures/Staples



APPROXIMATE WEIGHT (lbs/Kg):
Weight in lbs Divided by 2.2 = Weight in Kg

SMT/PROVIDER		RECEIVING FACILITY	
Name:		Transfer Doctor:	
Rank:		Receiving Doctor:	
SAR/EVAC Unit:		Pt. Received By:	
Signature:		Signature:	
Report Serial#:		Time Flown:	
Call Sign:		ACFT#:	
HAC:	H2P:	CC:	

IV THERAPY			PAIN SCALE (1-10)	
IV	1	2	TIME	PAIN
TIME				
SITE				
SIZE				
TYPE				
RATE				
mL				

Medical Rescue Report SAR Form 3-50.1A

PATIENT IDENTIFICATION		TRANSPORT INFORMATION				HISTORY
Name: Doe, John S.	Service: USN	Date :	24Nov2008	On Scene :	0830	S/S: Pt c/o pain R-upper arm
SSN: XXX-XX-6789	Rank: SO1	Incident :	24Nov2008	Recovered :	0838	ALLERGIES: NKDA LMP: N/A
DOB: 17Sep1975	Age: 33	Alert :	0800	Delivered :	0900	MEDICATIONS: Pt given Morphine 5mg IM for pain @0755
Unit: SEAL Team 1	Sex: Male	Launch:	0810	MTF: MTF Sand-Box		

☒U.S. Military ☐U.S. Civilian ☐Non-U.S. Mil ☐Non-U.S. Civ ☐EPW

MECHANISM OF INJURY/CHIEF COMPLAINT/TRANSFER PATIENT DIAGNOSIS

Ambulatory Pt sustained gun-shot wound to Right-upper arm.

AIRWAY		BREATHING		CIRCULATION		
Assessment	Treatment	Assessment	Treatment	Assessment		Treatment
☒Patent/Normal	OPA:	☒Adequate	☒NRB	Pulse:		
	NPA:	☐Inadequate	☐NC	☐Normal	☐Weak	☒ECG: NSR
☐Obstructed	ETT Size:	☐Bilateral	☐BVM	☒Bounding	☐Absent	☐CPR:
	NT Size:	☒ R ☒ L	☐Ventilator	Skin:		
	Suction: ____ ml	☐Absent	O_2 15 LPM	☐Hot	☐Warm	☐Dry
Other:		Other:		☒Cool	☒Moist	

GLASGOW COMA SCALE

Eye Opening	Verbal Activity	Motor Activity
☒4 - Spontaneous	☒5 – Oriented	☒6 – Obeys Command
☐3 – To Command	☐4 – Confused	☐5 – Localized Pain
☐2 – To Pain	☐3 – Inappropriate	☐4 – Withdraws to Pain
☐1 - None	☐2 – Incomprehensive	☐3 – Flexion to Pain
	☐1 - None	☐2 – Extension to Pain
GCS Total: 15	Time: 0831	☐1 - None

C/D/Spine Immobilization Type: Rescue Litter

Bleeding: ☐None ☐Uncontrolled ☒Dressing ☐Controlled ☐Quick Clot ☐Tourniquet

Shock: Pt supine with legs elevated, and covered with blanket. ☒Position ☒Blankets ☒IV ☐P.A.S.G.

VITAL SIGNS

TIME:	0832	0838	0843	0848	0853	0858
BP:	100Palp	90/72	100/74	110/72	108/72	105/70
PULSE:	124	126	120	100	98	99
RESP:	20	21	18	16	18	16
$S_pO2\%$:	95RA	99NRB	100NRB	100NRB	100NRB	100NRB
TEMP:	N/A	N/A	N/A	N/A	N/A	N/A
ECG:		S-TAC	S-TAC	NSR	NSR	NSR

MEDICATION	DOSE	ROUTE	TIME
1. Morphine	5mg	IV	0841
2.			
3.			
4.			
5.			
6.			
7.			

1. Deformities 2. Contusions 3. Abrasions 4. Puncture 5. Burns 6. Tenderness 7. Lacerations 8. Swelling 9. IV/Hep-lock 10. GSW 11. Amputation 12. Sutures/Staples

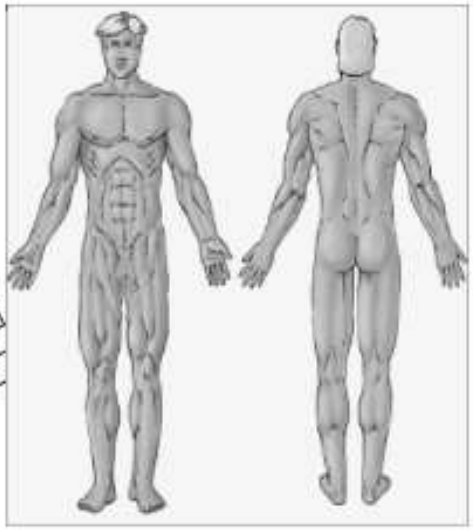
NARRATIVE

33 y/o WD/WN Male with gun-shot wound to R-upper arm caused during fire-fight. Pt did not lose consciousness; was treated with self-aid and buddy-aid (direct pressure→pressure bandage→bleeding controlled). Pt was given 5mg Morphine IM via buddy aid. "Wildcard 02" was called for CASEVAC: zone was not hot.

SMT and 2nd Crewman pursued Pt after assuring scene was safe; greeted by Pt's Team Leader and provided hasty turnover. Pt was awake, alert, sitting upright, and in obvious pain. A-B-Cs in tact; SMT applied additional dressing to R-arm injury after noticing significant exit wound. Rapid head-to-toe assessment revealed no other apparent injuries. Pt secured to litter and transported to Helo. (Weapon & ordnance was given to Pt's team member).

Pt supine in litter, secured to deck. En route: A-B-Cs reassessed, dressings reassessed, O2 provided via NRB, I.V. access gained, ECG=NSR, Vitals monitored, Morphine administered I.V. for pain, treated for shock, then reassessed interventions and A-B-Cs Q5 minutes. Pt tolerated flight and Tx well. Presented stable with positive response to O2, I.V., and Morphine—awake and oriented for remainder of flight.

Upon transfer @ MTF, Pt was awake, oriented. Pt received by MTF staff ER. SMT provided thorough turnover and paperwork to ER Nurse, signed by receiving doctor. Pt's personal affects given to ER staff.



APPROXIMATE WEIGHT (lbs/Kg): 100Kg

Weight in lbs Divided by 2.2 = Weight in Kg

SMT/PROVIDER		RECEIVING FACILITY	
Name: Joe M. Sailor		Transfer Doctor: N/A	
Rank: HM1/E5		Receiving Doctor: LCDR Burt Jones MD	
SAR/EVAC Unit: HSC-23		Pt. Received By: LT Kathy Brown NC	
Signature: On Original		Signature: On Original	
Report Serial#: 08-21		Time Flown: 1.5	
Call Sign: Wildcard 02		ACFT#: 12	
HAC: Smith	H2P: Johnson	CC: Stud	2CR: Mack

IV THERAPY			PAIN SCALE (1-10)	
IV	1	2	TIME	PAIN
TIME	0840		0830	8
SITE	L-AC		0840	8
SIZE	16G		0842	6
TYPE	NS .9%		0845	4
RATE	KVO		0850	3
mL	300ml		0900	4

SAMPLE

EVAC CATEGORY: _____ BATTLE ROSTER #: _____

TACTICAL COMBAT CASUALTY CARE (TCCC) CARD

NAME (Last, First): _____ LAST 4: _____

DATE (DD-MMM-YY): _____ TIME: _____

UNIT: _____ ALLERGIES: _____

Mechanism of Injury: (X all that apply)

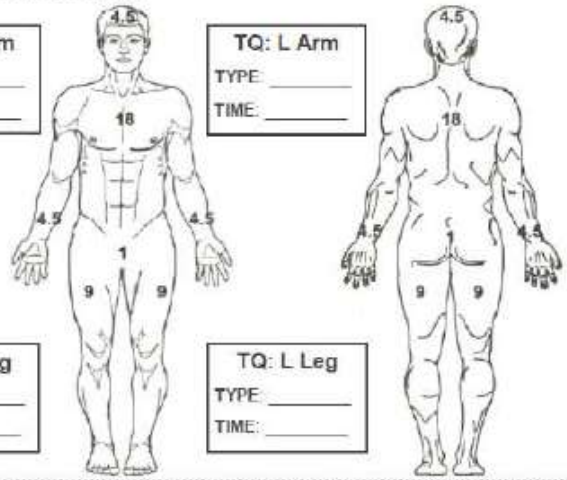
☐ Artillery ☐ Burn ☐ Fall ☐ Grenade ☐ GSW ☐ IED

☐ Landmine ☐ MVC ☐ RPG ☐ Other: _____

Injury: (Mark injuries with an X)

TQ: R Arm
TYPE: _____
TIME: _____

TQ: L Arm
TYPE: _____
TIME: _____



TQ: R Leg
TYPE: _____
TIME: _____

TQ: L Leg
TYPE: _____
TIME: _____

Signs & Symptoms: (Fill in the blank)

Time				
Pulse (Rate & Location)				
Blood Pressure				
Respiratory Rate				
Pulse Ox % O2 Sat				
AVPU				
Pain Scale (0-10)				

EVAC CATEGORY: _____ BATTLE ROSTER #: _____

Treatments: (X all that apply, and fill in the blank)

C: ☐ Extremity-TQ ☐ Junctional-TQ ☐ Pressure-Dressing

☐ Hemostatic-Dressing Type: _____

A: ☐ Intact ☐ NPA ☐ CRIC ☐ ET-Tube ☐ SGA Type: _____

B: ☐ O2 ☐ Needle-D ☐ Chest-Tube ☐ Chest-Seal Type: _____

C:	Name	Volume	Route	Time
Fluid				
Blood Product				

MEDS:	Name	Dose	Route	Time
Analgesic (e.g. Ketamine, Fentanyl, Morphine)				
Antibiotic (e.g. Moxifloxacin, Ertapenem)				
Other (e.g. TXA)				

OTHER: ☐ Combat-Pill-Pack ☐ Eye-Shield (☐ R ☐ L) ☐ Splint

☐ Hypothermia-Prevention Type: _____

NOTES: _____

FIRST RESPONDER
NAME (Last, First): _____ LAST 4: _____

WHO EMERGENCY UNIT FORM: GENERAL

□ Mass Casualty

Hospital Registration Number:

Date: DD/MM/YY | Time of Arrival: __ __:__ __(24h)

Patient Surname:
First Name:

Age: _____
INF / CH / AD

Sex: □Male □Female □ Other: _____

Date of Birth: DD/MM/YY

Weight: kg

Occupation: □ Unknown
Patient Residence (at least City and Sub-district): □ Unknown
Patient defined racial and ethnic identity: □ Unknown
Is an interpreter required? □ Yes □ No □ Not answered

Arrival Mode:
□Ambulance *Level of prehospital provider:* □ Basic □ Advanced
Emergency system activation Date: DD/MM/YY Time __:__ (24h)
Emergency system dispatch Date: DD/MM/YY Time __:__ (24h)
Emergency personnel arrival on scene Date: DD/MM/YY Time __:__ (24h)
Emergency personnel arrival on scene Date: DD/MM/YY Time __:__ (24h)
□Car/Truck (*circle* Private or Taxi)
□ Motorized 2/3-wheeler (*circle* Private or Taxi)
□ Public Transport □ Walk □ Other: _____

Contact Person:
Phone:
Relation:

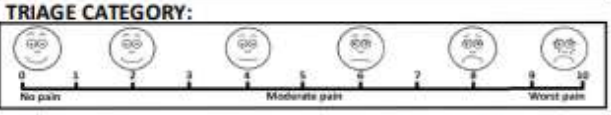
Number of prior facilities: ___
Referred from:

□Ambulatory Non-Ambulatory: □ Acute □ Chronic
Day to day activities limited by health problem or disability including old age? □ Yes □ No

CHIEF COMPLAINT:

INITIAL VS at __ __:__ __(24h)
Temp:____ BP:____/____ Pulse:____ RR:____
SpO_2:____ %on _____ Pain score: ____ / 10

TRIAGE CATEGORY:



TREATING PROVIDER ASSESSMENT: Date: DD/MM/YY **Time** __ __:__ __(24h) □ **Dead on arrival**

HIGH RISK SIGNS

□ Abnormal AVPU □ HR <55 or >130 (adult) □ Temp >39˚C or <36˚C □ SpO_2 <90% on RA
□ Stridor, voice change or unable to swallow □ Respiratory distress (grunting in child, retractions, cyanosis)
□ Poor perfusion, weak pulse, capillary refill >3s □ Vomits everything, can't drink or feed

PRIMARY SURVEY: (see Reference Card for normal findings, only mark NML if all key elements are normal)

Airway
□ NML

□ Angioedema □ Stridor □ Voice changes
□ Oral/Airway burns
Obstructed by: □ Tongue □ Blood □ Secretions
□ Vomit □ Foreign body

Airway: □ Repositioning □ Suction □ OPA □ NPA □ LMA
□ BVM □ ETT

Breathing
□ NML

Spontaneous Respiratory Rate: _____
Chest Rise: □ Shallow □ Retractions □ Paradoxical
Trachea: □ Midline □Deviated to □L □R
Breath Sounds: □ L_____ □ R_____

Oxygen: _____ L
□NC □Mask □NRB
□BVM □CPAP/BIPAP
□Ventilator
□Bronchodilator

Chest needle or tube (circle):
□ L – Size: _____ Depth: _____ cm
□ R – Size: _____ Depth: _____ cm

Circulation
□ NML

Skin: □ Warm □ Dry
□ Pale □ Cyanotic □ Moist □ Cool
Capillary refill: □ <3 sec or _____ sec
Pulses: □ Weak □ Asymmetric_____
JVD: □ Yes □No

Access: □IV: Loc _____ Size _____
□CVL: Loc _____ Size _____ □IO: Loc _____ Size _____
□IVF:_____mLs □NS □LR □Other _____
□Blood ordered □Epinephrine given

Disability
□ NML

□ A □ V □ P □ U
□ **Moves all extremities** or □ Deficit:
_____
Pupils: Size: L _____ R _____
Reactivity: L_____ R_____

Blood Glucose:

(Abnormal if < 3.5 mmol/dl)

□ Glucose □ Naloxone
□ Antiepileptic
□ Others:

HISTORY OF PRESENT ILLNESS:
(Symptoms, time course, exacerbating and alleviating factors, prior episodes & prior interventions, including any primary health care)

PAST MEDICAL HISTORY: History obtained from:

Medications: □ Unknown

Allergies: □ Unknown

Last Menstrual Cycle: _____ **G**____**P**____ □ Unknown
Pregnant? (circle) Yes / No □ Reported □ Testing done
Vaccinations up to date? □ Unknown □No □Yes _____
Substance Use: □ Tobacco □ Alcohol □ Drugs □ IV Drugs □ Unknown
Family History: _____
Safe at home? _____

Past Medical: □ HTN □ DM □ COPD □ Psych □ Renal Disease □ Unknown
Other:

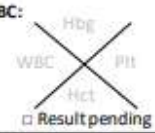
Past Surgeries (type & date): □ Unknown

PHYSICAL EXAM: (See Reference Card for normal findings. Do NOT mark NML unless all key elements are normal. Specify L or R if needed.)

□NML	**General**		□NML	**Cardiac**	
□NML	**Neuro/Psych**		□NML	**Abdominal**	
□NML	**HEENT**		□NML	**Pelvis/GU/ Rectal**	
□NML	**Neck**		□NML	**Lymph**	
□NML	**Respiratory**		□NML	**MSK**	
			□NML	**Skin**	

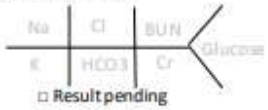
DIAGNOSTICS: (Labs, Imaging)

CBC:



□ Result pending

Lytes/Cr/glucose:



□ Result pending

Urine Dip: Glu: Ket: Blood:
Nitr: Leuk: Prot:

UPT: □ Pos □Neg
Malaria: □ Pos □Neg
HIV Rapid: □ Pos □Neg
Blood type: _____

ECG: Rate: _____
Sinus rhythm? □ Y □ N
Ischemia? □ Y □ N
Interpretation:

Other labs/imaging:

ADDITIONAL INTERVENTIONS:

Fluids and Medications Given	**Time** (24h)
□ IVF: _____ mLs □NS □LR □Other _____	____:____
□ Blood products (specify number of units given):	____:____
_____	____:____
□ Opioid Analgesia: _____	____:____
□ Other Analgesia: _____	____:____
□ Sedation/Paralytics: _____	____:____
□ Antimicrobials: _____	____:____
□ Tetanus: _____	____:____
□ Other:	

Procedures (include time and outcome)	**Time** (24h)
□ Intubation: _____	____:____
□ Chest Tube: _____	____:____
□ Lumbar Puncture: _____	____:____
□ Simple / Complex Laceration Repair: _____	____:____
□ Other:	

ASSESSMENT (include summary and differential) **AND PLAN** (imaging; meds/interventions; consults with time called/arrived and recs):

Revised Trauma Score

Glasgow Coma Scale (GCS)	Systolic Blood Pressure (mmHg)	Respiratory Rate (breaths/min)	Coded Value
13-15	>89	10-29	4
9-12	76-89	>29	3
6-8	50-75	6-9	2
4-5	1-49	1-5	1
3	0	0	0

The Revised Trauma Score (RTS) is made up of a combination of results from three categories:
* **Glasgow Coma Scale**
* **Systolic Blood Pressure**
* **Respiratory rate**

All of these results can be quickly assessed with minimal equipment: a flashlight, a watch and a sphygmomanometer since systolic pressure can be obtained through arterial palpation.

The score range is 0-12. In START triage, a patient with an RTS score of

12 is labeled **DELAYED** (walking wounded)
11 is **URGENT** (intervention is required but the patient can wait a short time)
10-3 is **IMMEDIATE** (immediate intervention is necessary)
<3 is **MORGUE**, which is given to seriously injured people. These people should not receive certain care because they are unlikely to survive. The reasoning is that diverting scarce resources away from people with a little chance of survival increases the chances of survival of others who are inherently more likely to survive.

Add the value of each characteristic. Highest possible total score is 12, and the lowest possible total score is 0.

Source: Champion et al., A Revision of the Trauma Score. Journal of Trauma. 1989:29(5): pg. 623-9

ATLS Hemorrhage Classification

For a 70kg male

Estimated Blood Loss Based on Patient's Initial Presentation				
Parameter	**Class I**	**Class II**	**Class III**	**Class IV**
Blood loss (ml)	Up to 750	750-1500	1500-2000	>2000
Blood loss (% blood volume)	Up to 15	15-30	30-40	>40
Pulse Rate (bpm)	<100	100-120	120-140	>140
Blood Pressure	Normal	Normal	Decreased	Decreased
Pulse Pressure (mmHg)	Normal or increased	Decreased	Decreased	Decreased
Respiratory Rate (breaths/min)	14-20	20-30	30-40	>35
Urine Output	>30	20-30	5-15	Neglible
CNS/Mental status	Slightly anxious	Mildly anxious	Anxious, confused	Confused, lethargic
Fluid replacement	Crystalloid	Crystalloid	Crystalloid and blood	Crystalloid and blood

CLASSIFICATIONS OF HEMORRHAGIC SHOCK				
	Class I	**Class II**	**Class III**	**Class IV**
Amount of Blood Loss (% total blood volume)	<750ml (<15%)	750-1500ml (15%- 30%)	1500-2000ml (30%- 40%)	>2000ml (>40%)
Heart rate	Normal or minimally increased	>100	>120	>140
Pulse (quality)	Normal	Thready	Thready/ very weak	No Radial/ thready Carotid
Capillary Refill	Normal	Delayed (3-5 seconds)	Delayed (>5 seconds)	Delayed (>5 seconds)
Respiratory Rate	Normal	20-30	30-40	>35
SBP	Normal	Normal	Decreased (<80 mmHg)	Greatly Decreased (approx. 60 mmHg)
Skin Color	Pink	Pale	White extremities/ Ashen Gray	White extremities/ Ashen Gray/ Cyanotic
Skin Temperature	Cool	Cool, Moist	Cool Extremities	Cold Extremities
Mental Status	Normal	Anxiety Fright	Severe Anxiety Confused	Lethargic Unconscious

CASUALTY ASSESSMENT AND SHOCK CASUALTIES

Care Under Fire Phase: There are many things that cause shock, the most common is uncontrolled hemorrhage. If the casualty has life-threatening extremity hemorrhage, use a tourniquet. For non-extremity hemorrhage, use direct pressure with a hemostatic dressing like Combat Gauze.

Tactical Field Care Phase: Shock is very difficult to treat in a hospital setting let alone in a field or combat environment. Don BSI. Reassess treatment started during Care Under Fire Phase to control the hemorrhage. Assess airway and intervene if necessary. Complete a head to toe assessment using DCAP-BTLS noting and treating additional injuries. Determine if vascular access is required (see Tactical Fluid Resuscitation lesson) and give fluids if necessary. If the casualty is able to drink fluids, they should be encouraged to do so. Consider pain medications and give antibiotics if warranted. Reassess all care provided. Document care given, prevent hypothermia, and CASEVAC.

World Health Organization

Trauma Care Checklist

Immediately after primary & secondary surveys:

IS FURTHER AIRWAY INTERVENTION NEEDED? May be needed if: • GCS 8 or below • Hypoxaemia or hypercarbia • Face, neck, chest or any severe trauma	☐ YES, DONE ☐ NO
IS THERE A *TENSION* PNEUMO-HAEMOTHORAX?	☐ YES, CHEST DRAIN PLACED ☐ NO
IS THE PULSE OXIMETER PLACED AND FUNCTIONING?	☐ YES ☐ NOT AVAILABLE
LARGE-BORE IV PLACED AND FLUIDS STARTED?	☐ YES ☐ NOT INDICATED ☐ NOT AVAILABLE
FULL SURVEY FOR (AND CONTROL OF) EXTERNAL BLEEDING, INCLUDING:	☐ SCALP ☐ PERINEUM ☐ BACK
ASSESSED FOR PELVIC FRACTURE BY:	☐ EXAM ☐ X-RAY ☐ CT
ASSESSED FOR INTERNAL BLEEDING BY:	☐ EXAM ☐ ULTRASOUND ☐ CT ☐ DIAGNOSTIC PERITONEAL LAVAGE
IS SPINAL IMMOBILIZATION NEEDED?	☐ YES, DONE ☐ NOT INDICATED
NEUROVASCULAR STATUS OF ALL 4 LIMBS CHECKED?	☐ YES
IS THE PATIENT HYPOTHERMIC?	☐ YES, WARMING ☐ NO
DOES THE PATIENT NEED (IF NO CONTRAINDICATION):	☐ URINARY CATHETER ☐ NASOGASTRIC TUBE ☐ CHEST DRAIN ☐ NONE INDICATED

Before team leaves patient:

HAS THE PATIENT BEEN GIVEN:	☐ TETANUS VACCINE ☐ ANALGESICS ☐ ANTIBIOTICS ☐ NONE INDICATED
HAVE ALL TESTS AND IMAGING BEEN REVIEWED?	☐ YES ☐ NO, FOLLOW-UP PLAN IN PLACE
WHICH SERIAL EXAMINATIONS ARE NEEDED?	☐ NEUROLOGICAL ☐ ABDOMINAL ☐ VASCULAR ☐ NONE
PLAN OF CARE DISCUSSED WITH:	☐ PATIENT/FAMILY ☐ RECEIVING UNIT ☐ PRIMARY TEAM ☐ OTHER SPECIALISTS
RELEVANT TRAUMA CHART OR FORM COMPLETED?	☐ YES ☐ NOT AVAILABLE

World Health Organization

Medical Emergency Checklist

Version Feb 2019

Immediately after primary & secondary surveys:

IS FURTHER AIRWAY INTERVENTION NEEDED? May be needed if: • Abnormal level of consciousness (AVPU scale) • Stridor • Respiratory Distress • Hypoxaemia or hypercarbia	☐ YES, DONE ☐ NO
IS THERE A SEVERE ALLERGIC REACTION? (ADRENALINE NEEDED)	☐ YES ☐ NO
IS THERE A *TENSION* PNEUMOTHORAX? (NEEDLE/DRAIN NEEDED)	☐ YES ☐ NO
DOES THE PATIENT NEED OXYGEN?	☐ YES ☐ NO
IS THE PULSE OXIMETER PLACED AND FUNCTIONING?	☐ YES ☐ NO
DOES THE PATIENT NEED BRONCHODILATORS? (e.g. salbutamol)	☐ YES ☐ NO
DOES THE PATIENT NEED IV FLUIDS?	☐ YES ☐ NO
ASSESSED FOR ONGOING BLEEDING (including gastrointestinal, vaginal, and other internal):	☐ BY EXAM ☐ NGT ☐ ULTRASOUND ☐ CT ☐ DIAGNOSTIC PERITONEAL LAVAGE
IS TREATMENT FOR HYPOGLYCAEMIA NEEDED?	☐ YES ☐ NO
IS TREATMENT FOR OPIOID OVERDOSE NEEDED?	☐ YES ☐ NO
IS THE PATIENT HYPOTHERMIC/HYPERTHERMIC?	☐ YES ☐ NO

When initial resuscitation is complete:

HAVE VITAL SIGNS BEEN RECHECKED?	☐ YES
HAS THE PATIENT BEEN GIVEN:	☐ ASPIRIN ☐ ANALGESIC ☐ TRANSFUSION ☐ ANTIBIOTICS ☐ NONE INDICATED
DOES THE PATIENT NEED AN ECG?	☐ YES ☐ NO
PREGNANCY TEST DONE?	☐ YES ☐ NOT INDICATED
HAVE ALL TESTS AND IMAGING BEEN REVIEWED?	☐ YES ☐ NO, PLAN IN PLACE
WHICH SERIAL EXAMS ARE NEEDED?	☐ NEUROLOGICAL ☐ ABDOMINAL ☐ VASCULAR ☐ RESPIRATORY ☐ NONE
PLAN OF CARE DISCUSSED WITH:	☐ PATIENT/FAMILY ☐ RECEIVING UNIT ☐ PRIMARY TEAM ☐ OTHER SPECIALISTS
RELEVANT EMERGENCY UNIT CHART COMPLETED?	☐ YES

*If intervention is needed but unavailable, respond YES and note missing item, date & time on stockout log sheet.

SBAR Patient Transfer

SBAR (Situation, Background, Assessment, Recommendation) is a standardized communication tool used in healthcare to ensure clear, concise, and structured patient handovers between clinicians. It is widely adopted to improve patient safety, reduce communication errors, and support continuity of care during shift changes, transfers, or urgent situations.

Even when providing care in unconventional, resource-limited, high-risk, or austere environments it is important to ensure structured patient handovers between providers. SBAR is the recommended format for conducting those transfers.

Situation

- Identify yourself & location
- Identify patient (name, age, sex)
- State diagnosis (suspected or definitive)
- State reason for transfer or handover (e.g. unavailable diagnostics or therapeutics)

Background

- Admission date
- Relevant past medical & surgical history
- Recent changes in status (ABCDE findings/interventions)
- Relevant labs & imaging
- Recent vital signs
- Management or interventions provided (e.g. O2, infusions, antibiotics, procedures)
- Relevant psychosocial factors

Assessment

- State the diagnoses or conditions (if diagnostic uncertainty)

- State severity of illness (stable or critical)
- State patient trajectory (worsening or improving)
- Report response to interventions provided

Recommendation

- State your recommendations & concerns (e.g. transfer for specialist consult or frequent monitoring)
- State timeline for recommendations (e.g. transfer or intervention needed in next 1 hour)
- State contingency plans (e.g. If patient transfer is delayed, then I will...)

Confirmation: Ask receiver to repeat back key information and clarify any questions.

Antibiotics Administration

Although penicillin was discovered in 1928, it took over a decade before it was being looked at as a potential solution for a wide variety of infections. At the beginning of World War II, drug companies, supported by the War Production Board, developed processes to scale up production; and by 1943-1944 penicillin was reaching forward military locations.

Soon afterward, later in 1944, the first publication demonstrating the improved outcomes of soldiers treated at the surgical units closest to the front was published. Anecdotal and retrospective reviews throughout subsequent conflicts continued to confirm that delaying treatment until casualties arrived at rear hospitals led to worse outcomes, and recommendations were for field administration, if evacuation times were delayed by several hours.

During the 1993 battle of Mogadishu, a 15-hour delay without antibiotics before treatment at a forward surgical facility resulted in wound infections in 16 of the 58 casualties, for an infection rate of 28%. Subsequently, battlefield antibiotics were recommended in the first TCCC Guidelines.

Later, at the beginning of the war in Iraq, 32 casualties from the drive to Baghdad at the start of the war received early antibiotics on the battlefield and a negligible rate of infections was achieved, despite casualty evacuation often being delayed. And in a separate review of 19 Specials Forces medics and 30 Iraqi military forces treated with antibiotics on the battlefield, no infections were noted despite an 11-hour delay in evacuation.

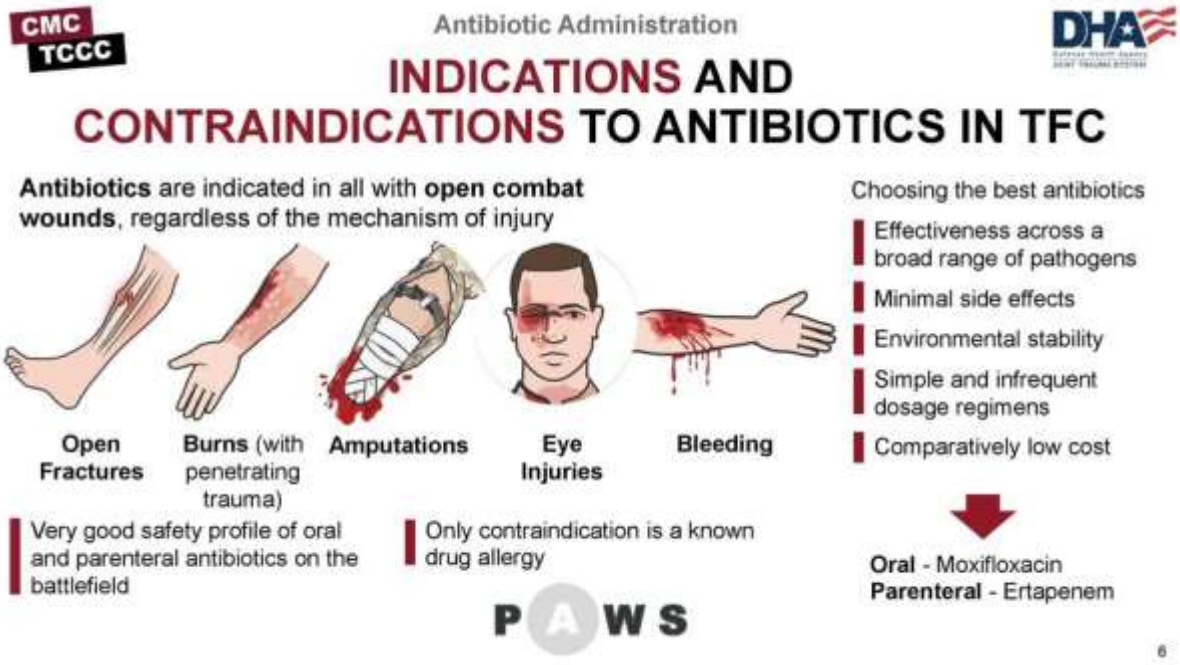
Animal models have also validated that antibiotics must be given as soon as possible after injury to maximize their ability to prevent wound infections. In one study, for example, a delay of 6 hours had a profound detrimental effect on the infection rate compared to early administration, regardless of the timing of surgery.

A 2007 review of TCCC as used on the battlefields of the Global War on Terrorism noted that there were no reports of adverse effects from the use of battlefield antibiotics, speaking to the safety profile of early administration of antibiotics.

Although antibiotics are not used in most civilian prehospital emergency medical systems with short transport times, definitive care for casualties may be significantly delayed in combat settings due to the longer distances to be covered and tactical constraints on evacuation assets. Antibiotics must be given as soon as possible after injury to maximize their ability to prevent wound infections.

Antibiotics are indicated in all open wounds, regardless of the mechanism of injury. Proper wound care, including irrigating the wound,

should be performed; but even when wounds are properly treated, antibiotics should be initiated.


CMC TCCC
Antibiotic Administration
DHA
INDICATIONS AND CONTRAINDICATIONS TO ANTIBIOTICS IN TFC
Antibiotics are indicated in all with open combat wounds, regardless of the mechanism of injury
Open Fractures
Burns (with penetrating trauma)
Amputations
Eye Injuries
Bleeding
Very good safety profile of oral and parenteral antibiotics on the battlefield
Only contraindication is a known drug allergy
Choosing the best antibiotics
Effectiveness across a broad range of pathogens
Minimal side effects
Environmental stability
Simple and infrequent dosage regimens
Comparatively low cost
Oral - Moxifloxacin
Parenteral - Ertapenem
P A W S
6

Highlighting this issue, it should be noted that extremity injuries have been prevalent in recent conflicts and infections have caused significant morbidity. For example, osteomyelitis has been reported in up to 9% of type III tibia fractures, and extremity infections have led to decreased success in limb salvage, an increase in additional surgical procedures and late amputations, as well as a decrease in the likelihood of the casualty being able to return to duty.

As just mentioned, the safety profile of both oral and parenteral antibiotics on the battlefield has been very good, and the only contraindication is a known drug allergy. As with any medication, there is a small risk of an adverse drug reaction that would require management, but to date that has rarely happened, and the benefits of early infection prevention far outweigh the small risk of an adverse reaction.

One of the considerations in choosing the best antibiotic is the need for effectiveness across a broad range of pathogens, as opposed to the

process of choosing antibiotics in a normal clinical setting where you use the wound site, potential pathogens known to exist in the environment, and the patient's health status to determine the best treatment choice. Also, a desire for minimal side effects, environmental stability, simple and infrequent dosage regimens, and comparatively low cost are all important considerations.

Since 2002, fourth-generation fluoroquinolones have been the oral antibiotic of choice. The second-generation cephalosporin cefotetan was initially the parenteral antibiotic of choice, but in 2011 ertapenem (a carbapenem antibiotic) was added as an alternative option, and then in 2017, ertapenem became the antibiotic of choice. Ertapenem and moxifloxacin are not ideal prophylaxis for every type of wound, but they are safe and effective broad-spectrum antibiotics. They are also recommended for prehospital care of penetrating wounds of the chest or abdomen in the current Joint Trauma System Infection Prevention Clinical Practice Guideline.

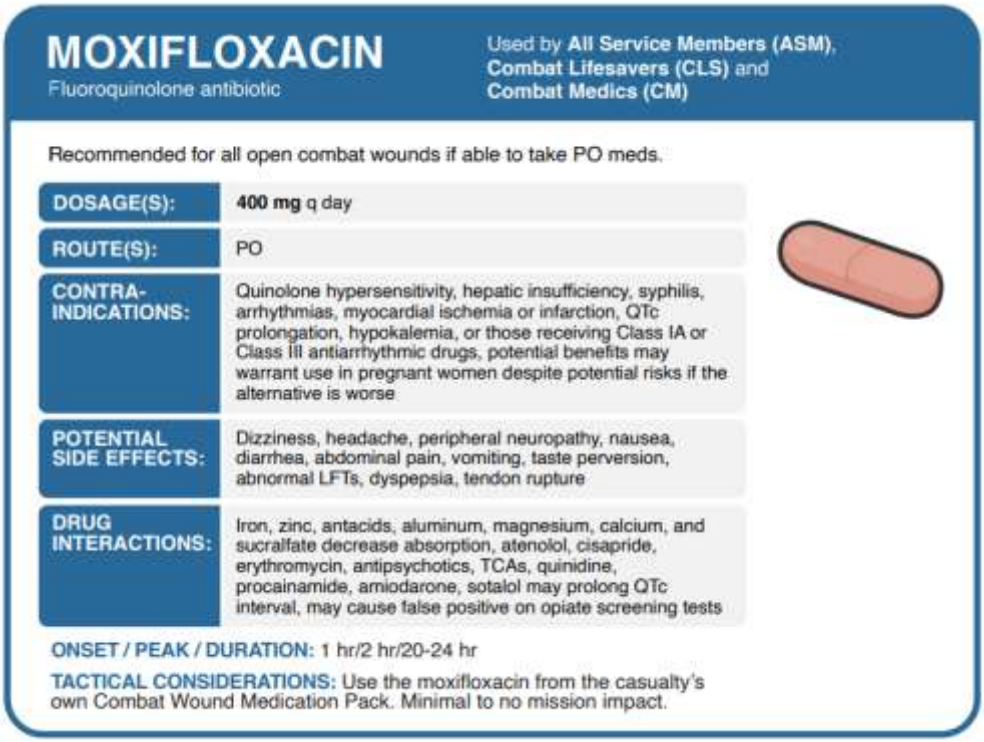
The two methods of administering antibiotics in the tactical setting are by mouth or by parenteral (intramuscular, intravenous, or intraosseous) injection.

The logistical issues associated with carrying, reconstituting, and then injecting or infusing parenteral medications make use of oral antibiotics the preferred route, when oral administration is possible.

Parenteral administration of antibiotics is required in casualties who are unconscious or who cannot take medications by mouth (for example, due to maxillofacial injuries). It is also required for casualties in shock, in whom the gastrointestinal tract blood flow may be inadequate for absorption of oral medications.

Prophylactic antibiotic therapy should be accompanied by wound irrigation, surgical debridement of the wound when the situation permits,

immunization for tetanus, and appropriate post-surgical care of the wound in order to minimize the risk of wound infection.



MOXIFLOXACIN
Fluoroquinolone antibiotic

Used by **All Service Members (ASM)**, **Combat Lifesavers (CLS)** and **Combat Medics (CM)**

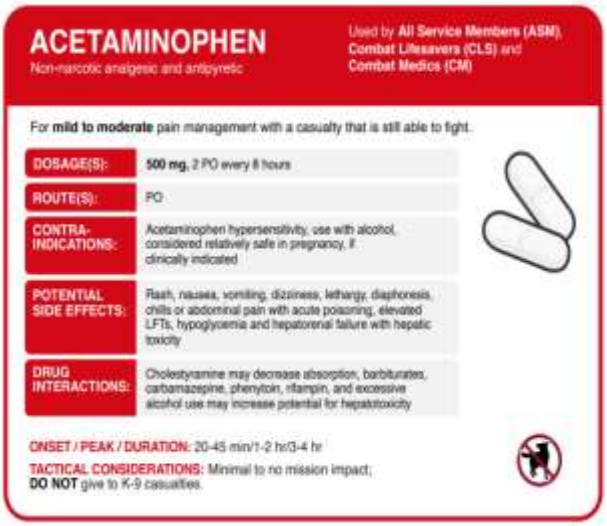
Recommended for all open combat wounds if able to take PO meds.

DOSAGE(S):	**400 mg** q day
ROUTE(S):	PO
CONTRA-INDICATIONS:	Quinolone hypersensitivity, hepatic insufficiency, syphilis, arrhythmias, myocardial ischemia or infarction, QTc prolongation, hypokalemia, or those receiving Class IA or Class III antiarrhythmic drugs, potential benefits may warrant use in pregnant women despite potential risks if the alternative is worse
POTENTIAL SIDE EFFECTS:	Dizziness, headache, peripheral neuropathy, nausea, diarrhea, abdominal pain, vomiting, taste perversion, abnormal LFTs, dyspepsia, tendon rupture
DRUG INTERACTIONS:	Iron, zinc, antacids, aluminum, magnesium, calcium, and sucralfate decrease absorption, atenolol, cisapride, erythromycin, antipsychotics, TCAs, quinidine, procainamide, amiodarone, sotalol may prolong QTc interval, may cause false positive on opiate screening tests

ONSET / PEAK / DURATION: 1 hr/2 hr/20-24 hr

TACTICAL CONSIDERATIONS: Use the moxifloxacin from the casualty's own Combat Wound Medication Pack. Minimal to no mission impact.

Some prescription antibiotics can be obtained after online consultation with a physician from companies like: Jase Medical (https://jase.com/) and Contingency Medical (https://contingencymedical.com/).



ACETAMINOPHEN
Non-narcotic analgesic and antipyretic

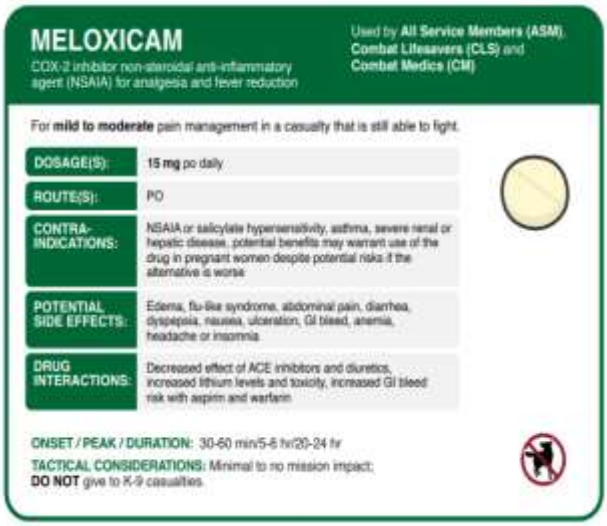
Used by **All Service Members (ASM)**, **Combat Lifesavers (CLS)** and **Combat Medics (CM)**

For **mild to moderate** pain management with a casualty that is still able to fight.

DOSAGE(S):	**500 mg**, 2 PO every 8 hours
ROUTE(S):	PO
CONTRA-INDICATIONS:	Acetaminophen hypersensitivity, use with alcohol, considered relatively safe in pregnancy, if clinically indicated
POTENTIAL SIDE EFFECTS:	Rash, nausea, vomiting, dizziness, lethargy, diaphoresis, chills or abdominal pain with acute poisoning, elevated LFTs, hypoglycemia and hepatorenal failure with hepatic toxicity
DRUG INTERACTIONS:	Cholestyramine may decrease absorption; barbiturates, carbamazepine, phenytoin, rifampin, and excessive alcohol use may increase potential for hepatotoxicity

ONSET / PEAK / DURATION: 20-45 min/1-2 hr/3-4 hr

TACTICAL CONSIDERATIONS: Minimal to no mission impact;
DO NOT give to K-9 casualties.



MELOXICAM
COX-2 inhibitor non-steroidal anti-inflammatory agent (NSAIA) for analgesia and fever reduction

Used by **All Service Members (ASM)**, **Combat Lifesavers (CLS)** and **Combat Medics (CM)**

For **mild to moderate** pain management in a casualty that is still able to fight.

DOSAGE(S):	**15 mg** po daily
ROUTE(S):	PO
CONTRA-INDICATIONS:	NSAIA or salicylate hypersensitivity, asthma, severe renal or hepatic disease, potential benefits may warrant use of the drug in pregnant women despite potential risks if the alternative is worse
POTENTIAL SIDE EFFECTS:	Edema, flu-like syndrome, abdominal pain, diarrhea, dyspepsia, nausea, ulceration, GI bleed, anemia, headache or insomnia
DRUG INTERACTIONS:	Decreased effect of ACE inhibitors and diuretics, increased lithium levels and toxicity, increased GI bleed risk with aspirin and warfarin

ONSET / PEAK / DURATION: 30-60 min/5-6 hr/20-24 hr

TACTICAL CONSIDERATIONS: Minimal to no mission impact;
DO NOT give to K-9 casualties.

Pain medication may be included with antibiotics to treat injuries.

Solutions Appropriate for Wound Care		
Solution	**Preparation**	**Notes**
Povidone iodine	Comes pre-made in containers. Best diluted for dressings: 1 part povidone iodine to at least 3 or 4 parts saline or sterile water.	Toxic to healthy tissues; best used in diluted form for only a few days- then change to a milder solution. Safe on the face and around the eyes.
Saline	Comes pre-made, but easy to make yourself. To 1 liter of water add 1 tsp salt. Boil the solution for at least 60 seconds and allow to cool. Store in a closed, sterile container and refrigerate if possible. Good for several days.	Safe anywhere on the body.
Sterile water	Boil a liter of water for at least 60 seconds and allow to cool. Store in a closed, sterile container and refrigerate if possible. Good for several days.	Safe anywhere on the body.
Dakin's solution	Some pharmacies keep Dakin's solution in stock, but it is easy to make. To 1 liter of saline solution, add 5-10 cc of liquid bleach. Store in a closed, sterile container and refrigerate if possible. If your pharmacy carries Dakin's solution, it's best used diluted: 1 part Dakin's solution mixed with 3-4 parts saline.	Better antibacterial agent than saline- so a little harsher on normal tissue. Do not use around the eyes. Makes wounds smell better.

Wound irrigation is a critical component of wound management, significantly enhancing healing and reducing infection risk by mechanically removing debris, bacteria, necrotic tissue, and biofilm. Evidence consistently shows that proper irrigation reduces bacterial burden, supports a moist wound environment essential for cellular activity, and accelerates the transition from the inflammatory to the proliferative phase of healing.

Dakin’s Solution

Since 1916, Dakin's solution has been used to kill germs, prevent germ growth in wounds, and control odor, while enabling your body to continue healing. This recipe is a straightforward and economical way to make the amount you need without a prescription or a trip to the pharmacy. Dakin’s solution is also known as dilute sodium hypochlorite solution, ranging from full strength (0.5%) to the gentlest so-called quarter percent (0.025%) concentration, which is 1/20 in strength.

Dakin’s solution is diluted bleach used to kill germs without hurting a healing wound. Dakin’s solution can be made at home or purchased at Walmart, CVS, or Amazon.

Supplies

- Bleach, such as Clorox® (unscented at regular concentration)—NOT concentrated bleach
- Baking Soda
- Water
- Clean pan with lid
- Sterile measuring cup, spoons, and glass jars for storing Dakin’s solution

Sterilizing options

- Choose one of the following options to sterilize your tools.
- Sterilize tools by running the dishwasher at the highest settings for hot water and heat
- Wash/boil equipment by hand and air dry, do not use a towel

How to make Dakin’s Solution

- Wash your hands with soap and water.
- Measure out 32 ounces (4 cups) of tap water and pour into a clean pan. (Start with extra water as you need 32 ounces after boiling and some water will evaporate during the process.)

- Boil water for 15 minutes with lid on the pan, remove from heat.
- Add ½ teaspoonful of baking soda to the boiled water.
- Measure bleach based on desired solution strength and add it to the water.

	Full Strength	½ Strength	¼ Strength	$^{1}/_{20}$ Strength
Bleach	3 oz. (or 95 ml)	3 Tbsp + ½ tsp (or 48ml)	1Tbsp + 2 tsp (or 24ml)	1 tsp (or 5 ml)
Water	32 oz.	32 oz.	32 oz.	32 oz.

- Place the solution in a sterile jar. Close the sterile lid tightly.
- Cover the entire jar with aluminum foil to protect it from light
- Label the jar with the date and time you made the solution
- Dakin's solution can be stored for one month at room temperature (sealed and covered)
- Throw away unused Dakin's solution 48 hours after opening jar

Precautions

- Keep out of reach of children
- Do not use Dakin's solution longer than one week, unless directed by your doctor
- Do not use if you are allergic to any of the ingredients
- Stop using the solution if the condition worsens, or a rash or any other reaction develops

Call your doctor if you experience any of the following:

- Increased pain or burning sensation
- Rash or itching
- Redness of skin
- Swelling, hives or blisters
- Signs or symptoms of wound infection

How to Make Sugardine

Sugardine is created by mixing granulated sugar with a solution of iodine (such as Betadine) to form a thick paste with a consistency similar to peanut butter. Starting with a quantity of sugar that matches the desired amount of the final product, combine the sugar and iodine in a bowl, gradually adding the iodine until you achieve the paste consistency needed for application to wounds. This usually requires around a 2-to-1 mixture (i.e. 1 cup sugar and 1/2 cup iodine solution).

Studies found that sugardine is effective in treating wounds, burns, and ulcers. "*Over a 56-month period (January 1976 to August 1980), we treated 605 patients for wounds, burns, and ulcers with granulated sugar and povidone-iodine. Rapid healing ensued, due to a reduction in bacterial contamination, rapid debridement of eschar, probable nourishment of surface cells, filling of defects with granulation tissue, and covering of granulation tissue with epithelium. The requirements for skin grafting and antibiotics were greatly reduced, as were hospital costs for wound, burn, and ulcer care.*" (PMID: 7302631)

Sugardine is also a commonly used treatment in animal care, particularly for horses. It is a natural antiseptic that utilizes the antibacterial properties of iodine and pure sugar to help in both preventing and treating infections.

While sugardine can be easily made at home, it is also frequently available for purchase from farm supply stores.

Oral Rehydration Solution (ORS)

Homemade Oral Rehydration Solution Recipes		
Base Beverage	**Recipe**	
Water	• 4 cups of water • ½ teaspoon table salt • 2 Tablespoons sugar • Optional: Crystal Light® to taste	
Gatorade® G2	• 4 cups Gatorade® G2 (or one, 32 ounce bottle) • ½ teaspoon table salt ***if it is too salty, try ½ teaspoon of salt per 32 oz. Some is better than not drinking at all.*	
Chicken Broth	**Option 1**: • 4 cups water • 1 dry chicken broth cube • 2 tablespoons sugar	**Option 2**: • 2 cups liquid broth (not low sodium!) • 2 cups water • 2 tablespoons sugar
Tomato Juice	• 2 ½ cups plain tomato juice (not V8 or bloody mary mix) • 1 ½ cups water	
Cranberry Juice	• ¾ cup juice • 3 & ¼ cups water • ½ teaspoons table salt	
Cereal-Based	• ½ cup dry baby rice cereal, cooked • 2 cups water • ¼ teaspoon table salt • Combine ingredients. Mix until well dissolved & smooth. Refrigerate. Solution should be thick, but pourable & drinkable.	

Oral rehydration solution (ORS) is a simple solution of salt, sugar, and water that is used to aid in dehydration due to diarrhea. The Centers for Disease Control and Prevention (CDC) recommends ORS when a person is dehydrated.

Dehydration happens when your body loses more fluid than you consume. This can happen for many reasons, including excessive diarrhea or vomiting. When left untreated, dehydration can be dangerous. This is because your body relies on water to perform basic functions. Oral rehydration therapy is a treatment for dehydration. It involves drinking a beverage made of water, sugar, and electrolytes, specifically potassium and sodium. The beverage is called an oral rehydration solution (ORS).

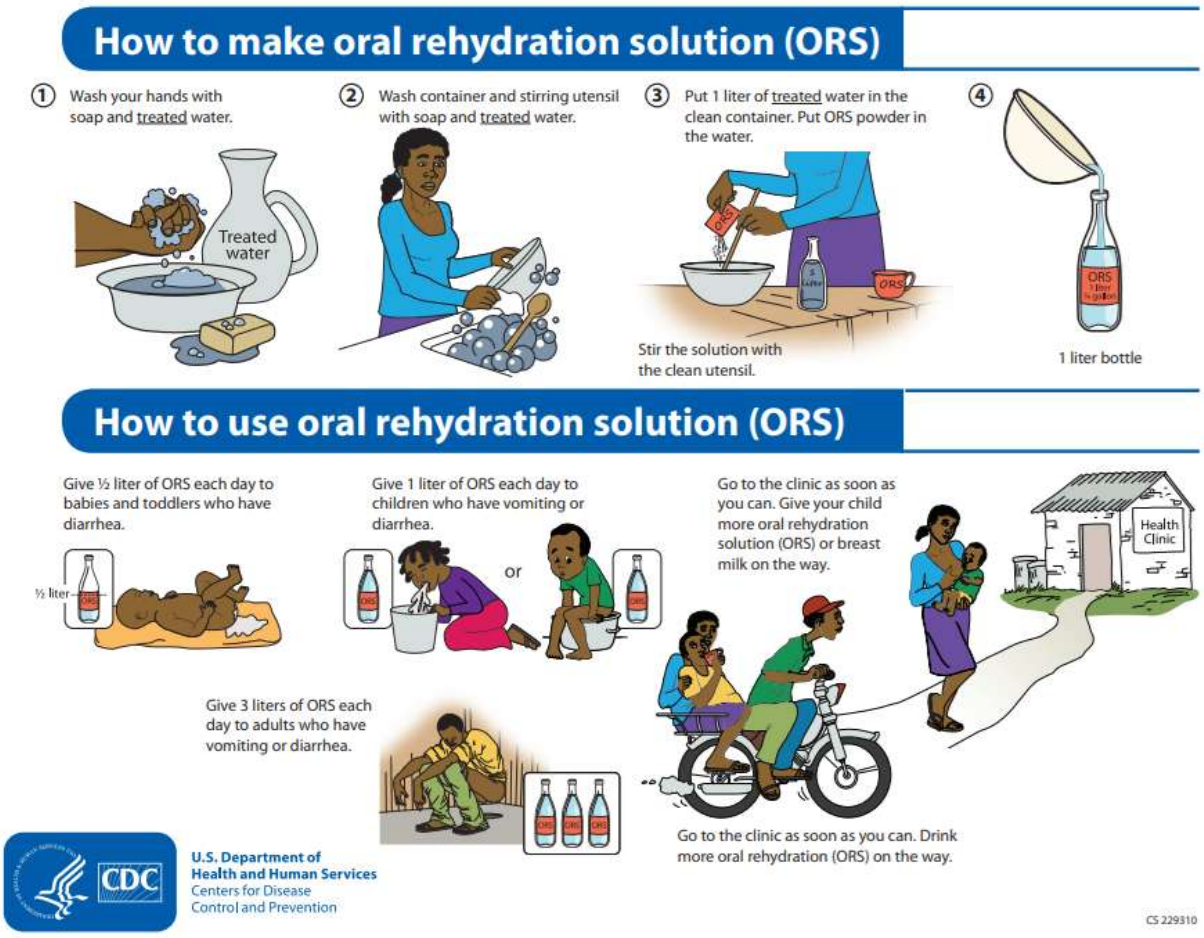
World Health Organization ORS Recipe

- 3/8 tsp salt (sodium chloride)

- ¼ tsp Morton Salt Substitute® (potassium chloride)
- ½ tsp baking soda (sodium bicarbonate)
- 2 tbsp + 2 tsp sugar
- Add tap water to make 1 liter
- Optional: NutraSweet or Splenda-based flavoring of choice to taste.

If ORS is not available, water, broth, and/or other fluids can be provided. Drinks with a high sugar content, such as juice or soft drinks, are not recommended because they could worsen diarrhea.

WARNING: When used improperly, an ORS can lead to salt toxicity. This is more likely to happen if you drink an ORS when you don't actually need it.


How to make oral rehydration solution (ORS)
1 Wash your hands with soap and treated water.
Treated water
2 Wash container and stirring utensil with soap and treated water.
3 Put 1 liter of treated water in the clean container. Put ORS powder in the water.
Stir the solution with the clean utensil.
4
ORS
1 liter bottle
How to use oral rehydration solution (ORS)
Give ½ liter of ORS each day to babies and toddlers who have diarrhea.
½ liter
Give 1 liter of ORS each day to children who have vomiting or diarrhea.
or
Go to the clinic as soon as you can. Give your child more oral rehydration solution (ORS) or breast milk on the way.
Health Clinic
Give 3 liters of ORS each day to adults who have vomiting or diarrhea.
Go to the clinic as soon as you can. Drink more oral rehydration (ORS) on the way.
CDC
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
CS 229310

Dehydration Prevention & Treatment Chart

AGE GROUP	PREVENT DEHYDRATION (If Eating)	PREVENT DEHYDRATION (If NOT Eating) AND TREAT DEHYDRATION (If Eating or NOT Eating)
Infants *< 1 year of age*	○ Breast milk ○ Standard infant formula ○ Store-bought oral rehydration solution such as Pedialyte®, Naturalyte®, Infalyte®, or Rehydralyte® ○ Diluted Juices* (½ water, ½ juice) ***Alternative:*** *Home made Cereal Based Oral Rehydration Solution (CBORS).*	✚ Breast milk ✚ Standard infant formula ✚ Store-bought oral rehydration solution such as Pedialyte®, Naturalyte®, Infalyte®, or Rehydralyte® ***Alternative:*** *Home made Cereal-Based Oral Rehydration Solution (CBORS).*
Toddlers *1 to 3 years of age*	○ Milk (if not vomiting) ○ Store-bought oral rehydration solution such as Pedialyte®, Naturalyte®, Infalyte®, or Rehydralyte® ○ Broth, soup ○ Jell-O® Water (1 package per quart of water, or twice as much water as usual) ○ Popsicles ○ Gatorade® ○ Kool-Aide® ○ Juices*	✚ Store-bought oral rehydration solution such as Pedialyte®, Naturalyte®, Infalyte®, or Rehydralyte® ***Alternate:*** *Home made Cereal-Based Oral Rehydration Solution (CBORS).*
Children *over 3 years,* **Teens and Adults**	○ Water ○ Broth, soup ○ Jell-O® Water (1 package per quart of water, or twice as much water as usual) ○ Popsicles ○ Gatorade® ○ Kool-Aide® ○ Juices*	✚ Home made Oral Rehydration Solution.

Recipes for Oral Rehydration Solutions

If you cannot buy a liquid with electrolytes (with salt and sugar), you can make your own rehydration solutions.

Recipe for Oral Rehydration Solution
For adults, teens and children over the age 3

Instead of store bought rehydration or sports drink you can make your own oral re-hydration solution at home.

INGREDIENTS:

- 4 cups clean water
- 2 tablespoons of sugar
- ½ teaspoon of salt

Mix the 4 cups of clean water with 2 tablespoons of sugar and ½ teaspoon of salt. Mix it well but do not boil as this will concentrate the ingredients. If local health officials give a "Boil Water Order", boil the water first for 1 minute and then allow it to cool before adding the sugar and salt.

Recipe for Cereal-Based Oral Rehydration Solution (CBORS)

For children under 3 years, you can make this cereal-based oral rehydration solution at home.

INGREDIENTS:

- 2 cups of clean water
- ½ cup of instant baby rice cereal
- ¼ level teaspoon table salt

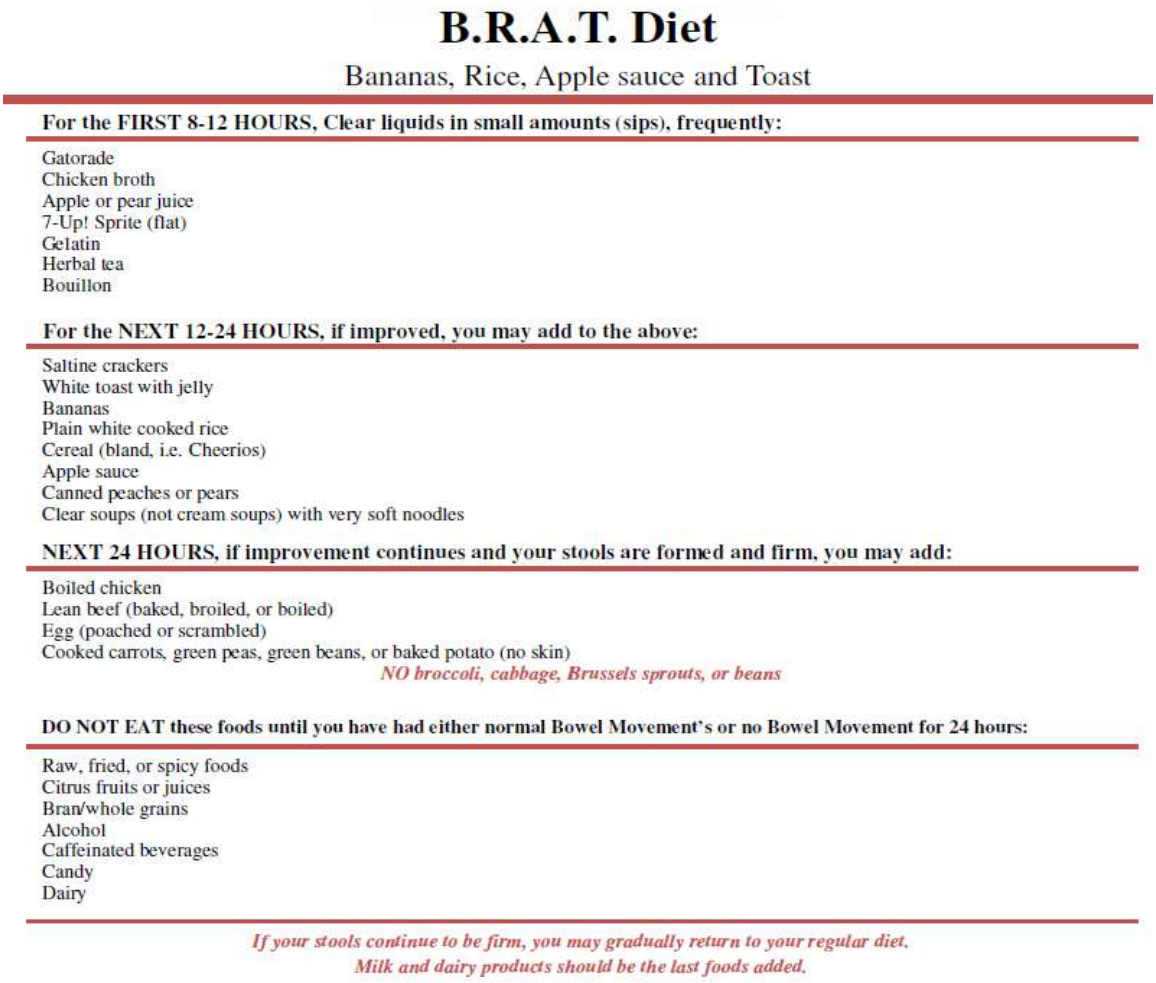
Mix thoroughly, but do not boil as this will concentrate the ingredients. If local health officials give a "Boil Water Order", boil water first for 1 minute and then allow to it to cool before adding cereal and salt.

Notes: Use of homemade CBORS should be considered as a last option because of the chance for mixing mistakes, which could be a problem for infants. Children are also less likely to take cereal-based solutions than glucose-based solutions. However, when properly mixed and used, CBORS has been found to be as effective as Pedialyte in maintaining hydration and correcting both hypernatermia and hyponateremia. *Source: Pediatrics Vol 100 No. 5. November 1997, p e3, available at: http: pediatrics/aappublications.org/cgi/content/full 100/5/e3*

The BRAT Diet

The BRAT diet is a short-term, bland eating plan recommended for managing mild gastrointestinal distress such as nausea, vomiting, or diarrhea. The acronym stands for Bananas, Rice, Applesauce, and Toast—foods that are low in fiber, easy to digest, and gentle on the stomach. These foods help solidify stools and reduce bowel movements, making them particularly useful during acute episodes of diarrhea.

While the BRAT diet has been traditionally recommended, especially for children, modern medical guidelines caution against its prolonged use. It is not nutritionally complete, lacking sufficient protein, fats, and essential micronutrients, and may lead to energy deficiency or malnutrition if followed for more than 24–48 hours.



B.R.A.T. Diet

Bananas, Rice, Apple sauce and Toast

For the FIRST 8-12 HOURS, Clear liquids in small amounts (sips), frequently:

Gatorade
Chicken broth
Apple or pear juice
7-Up! Sprite (flat)
Gelatin
Herbal tea
Bouillon

For the NEXT 12-24 HOURS, if improved, you may add to the above:

Saltine crackers
White toast with jelly
Bananas
Plain white cooked rice
Cereal (bland, i.e. Cheerios)
Apple sauce
Canned peaches or pears
Clear soups (not cream soups) with very soft noodles

NEXT 24 HOURS, if improvement continues and your stools are formed and firm, you may add:

Boiled chicken
Lean beef (baked, broiled, or boiled)
Egg (poached or scrambled)
Cooked carrots, green peas, green beans, or baked potato (no skin)

NO broccoli, cabbage, Brussels sprouts, or beans

DO NOT EAT these foods until you have had either normal Bowel Movement's or no Bowel Movement for 24 hours:

Raw, fried, or spicy foods
Citrus fruits or juices
Bran/whole grains
Alcohol
Caffeinated beverages
Candy
Dairy

If your stools continue to be firm, you may gradually return to your regular diet.
Milk and dairy products should be the last foods added.

Bed Bugs

Bed bugs (Cimex species) are small, flat insects. Bed bugs bite people and animals at night while they sleep, feeding on their blood.

The size of an adult bedbug compared with a US penny

Bed bugs are reddish-brown in color, are wingless, and range from 1mm to 7mm in size (roughly the size of Lincoln's head on a penny). They can live several months without a blood meal.

Bed bugs are not known to spread diseases to people. However, they cause irritation, itching, and loss off sleep. Removal from dwellings can be expensive and inconvenient to remove.

Although bed bugs are not known to spread diseases to people, they can cause itching and loss of sleep. Sometimes intense itching can lead to excessive scratching and possibly a secondary skin infection. An allergic reaction to several bites is possible. If you think you are having an allergic reaction to bed bug bites, speak with your healthcare provider.

Bed bug bites affect each person differently. Signs of a bed bug bites include

- No physical signs
- Small bite marks
- Serious allergic reactions (rare).

When bed bugs bite, they inject fluids (anesthetic and anticoagulant) that prevents a person from feeling the bite when it happens. Most people do not notice the bite marks until they appear from one to several days after the initial bite.

Bites look similar to mosquito or flea bites—a slightly swollen and red area that may itch and be irritating. The bite marks may be random or appear in a straight line.

Other symptoms of bed bug bites include insomnia, anxiety, and skin problems that arise from intense scratching of the bites.

Allergic symptoms can include enlarged bite marks, painful swellings at the bite site, and, on rare occasions, anaphylaxis. If you think you are having an allergic reaction to bed bug bites, speak with your healthcare provider.

One of the easiest ways to identify a bed bug infestation is by bite marks on the face, neck, arms, hands, or any other body parts after sleeping. However, these bite marks may take as long as 14 days to develop in some people. It's important to look for other clues to determine if you have an infestation.

Look for

- Exoskeletons (shed after molting),
- Bed bugs in the fold of mattresses and sheets,
- Rusty–colored blood spots on mattresses or nearby furniture, and
- A sweet musty odor.

Kill the Bed Bugs

Heat treatment: You can use a clothes dryer on high heat. You can also use black plastic bags in a hot, closed car in the sun, but success depends on your climate and other factors. Do-it-yourself heat treatments might not work.

Cold treatment may work, but can only be successful in the home environment if the freezer is set to 0o F. Many home refrigerator freezers are not cold enough to kill bed bugs. You must leave the items in a sealed bag in the freezer at 0o for three days. Always use a thermometer to check the temperature, since home freezers are not always set to 0 degrees.

Desiccants (chemicals that dry things out) can be particularly effective in some situations since they work by drying out the bug (which means the bed bugs can't develop resistance). However, they may take

several months to work. If using desiccants, be sure to use only products registered by EPA as a Pesticide.

Examples of desiccants include:

- Diatomaceous earth.
- Boric acid.

When using desiccants to control bed bugs it is critical to use those that are registered by EPA and labeled for bed bug control. Desiccants that are intended for other uses, such as food-grade or for use in swimming pools, pose an increased inhalation risk to people. Use of desiccants is limited to cracks and crevices use only to reduce inhalation risk.

(Source: https://www.cdc.gov/bed-bugs/ / https://www.epa.gov/bedbugs)

Preventing & Treating Lice

What are lice?

Lice are parasites that can be found on people's head and bodies, including the pubic area. Lice survive by feeding on human blood. Lice eggs (nits) are often yellow or white and attach to the hair shaft. They are very small and hard to see. The latter stages of lice are very small insects that can grow to about the size of a sesame seed. They are light or dark brown in color.

What to do if you think you have lice:

- Obtain treatment for infested person(s). This requires using an Over-the-counter (OTC) or prescription medication. Follow the treatment steps listed on box.
- If you are living in a shelter, make sure to inform staff that you may have lice. They may be able to perform a lice check and help you with the next steps.
- To prevent spread, notify shelter, school, household members, camp, etc. and avoid activities that may spread head lice.

Visible nits or crawling lice is the most reliable sign of a lice infestation other symptoms may include:

- Tickling feeling of something moving in the hair.
- Itching on the head and scalp (head lice), body (body lice) and genital are (pubic lice).
- Irritability and difficulty sleeping (head lice are most active in the dark).
- Sores on the skin caused by scratching.
- Intense itching and rash (body lice).
- Thickening and discoloration of the skin if there is a long-term infestation (body lice).

How to prevent lice:

- Avoid contact with people who have lice.
- Avoid sharing personal items like hairbrushes, towels, hats, scarves, coats, and bedding.
- Keep long hair tidy.

Treating head lice:

- Head lice can be treated with a chemical lice treatment and removed manually with a comb. If you aren't sure which medicine to use or how to use a medication, ask your physician, pharmacist or other healthcare provider.

- Chemical lice treatment can be purchased over the counter at pharmacies. Some shelters offer free lice treatments.
- Follow the instructions on the package of the lice treatment. Do not use conditioner or a combination shampoo/conditioner before using the lice treatment. Do not re-wash the hair for 1-2 days after the medicine is removed.
- Use a 'nit comb', or very small comb, to remove lice from the hair shaft.
- Continue checking hair and using a nit comb for 2-3 days after treatment.
- Put on clean clothing after treatment.
- Retreatment may be recommended in 7-9 days, depending on the product.

Treating body & pubic lice:

- If possible, take a shower with soap and warm water to dislodge any lice that may be on the body.
- A doctor may be able to prescribe treatment with chemical treatments.
- Follow the directions from the provider or on the package. Always contact a doctor or pharmacist if unsure how to use medicine.

Treating clothing, bedding, & personal items:

- If you have lice, it is important to clean all of your clothing items, bedding, and personal hygiene items to prevent reinfection.
- For clothing and bedding, it is best to wash them in extra-hot water for at least 5 minutes. Dry clothes in a dryer for 30 minutes on the hottest setting.
- If a washer and dryer is not available, leave items in a sealed plastic bag for two weeks.
- Soak combs and brushes in hot water for 5-10 minutes.

(Source: https://www.cdc.gov/lice/)

Scabies

SCABIES
SCABIES is a SKIN INFESTATION caused by a MITE known as the Sarcoptes scabiei. Untreated, these microscopic mites can LIVE ON YOUR SKIN for months.
0.3 mm
SCABIES MITE
The RASH itself can consist of tiny bites, hives, bumps under the skin, or pimple-like bumps.
The mites will burrow into the top layer of your skin to live and feed.
SKIN
Feces
Eggs

Scabies is caused by the human itch mite (Sarcoptes scabiei var. hominis). The microscopic scabies mite burrows into the upper layer of the skin where it lives and lays its eggs. Scabies can spread quickly under crowded conditions where close body and skin contact is frequent.

The most common symptoms of scabies are intense itching, especially at night, and a pimple-like skin rash. Common areas on body where symptoms occur include:

- between fingers,
- in the skin folds of the wrist, elbow, knee, or armpit, and
- on the penis, nipples, waist, buttocks, and shoulder blades.

You may see tiny burrows on the skin, caused by the female mite tunneling just beneath the surface of the skin.

You can get scabies by

- Direct, extended, skin-to-skin contact with a person who has scabies or
- Less commonly, sharing clothing, towels, or bedding used by an infected person.
- Homeless shelters or encampments.

To prevent the spread of scabies

- Treat other household members with whom you have had direct skin contact or have shared a bed, towels, or clothing at the same time.
- Wash bedding, clothing, and towels in hot water and dry in a hot dryer. Temperatures in excess of 50°C or 122°F for 10 minutes will kill mites and eggs.
- Dry-clean items that can't be washed or seal them in a closed plastic bag for at least 72 hours to a week.
- Avoid skin-to-skin contact with others until treatment is complete.
- Notify people you had direct skin-to-skin contact with during the previous two months and encourage them to seek treatment.
- Scabies mites generally do not survive more than two to three days away from human skin.

Products used to treat scabies (scabicides) kill scabies mites; some also kill mite eggs. Scabicides require a doctor's prescription. No non-prescription products have been tested and approved to treat scabies. Carefully follow the instructions contained in the box or on the label. Scabicide lotion or cream should be applied to all areas of the body from the neck down to the feet and toes. (Source: https://www.cdc.gov/scabies/about/)

Tinea Versicolor

Tinea versicolor is fairly common. It is caused by a type of fungus called Malassezia that is commonly found on human skin. The condition is most common in adolescents and young adults. It typically occurs in warm and humid climates. It does not spread person to person.

Applying over-the-counter dandruff shampoo containing selenium sulfide (the primary ingredient in Selsun Blue Shampoo) or ketoconazole to the skin for 10 minutes each day in the shower is a treatment option. Selenium sulfide an anti-infective agent, relieves itching and flaking of the scalp and removes the dry, scaly particles that are commonly referred to as dandruff or seborrhea, and is also used to treat tinea versicolor, a fungal infection of the skin.

Oral antifungals (e.g., fluconazole, itraconazole) are used for extensive or recurrent cases.

Treatment duration: 1–2 weeks for topical therapy; oral therapy may be shorter.

Preventive measures: shower after sweating, wear loose cotton clothing, avoid oily skincare products.

Ring Worm

Ringworm on the skin like athlete's foot (tinea pedis) and jock itch (tinea cruris) are usually treated with non-prescription antifungal medications. Antifungal creams, ointments, lotions, or powders are usually applied to the skin for 2 to 4 weeks.

Ringworm on the scalp usually needs to be treated with prescription antifungal medication taken by mouth for 1 to 3 months. Creams, lotions, or powders don't work for ringworm on the scalp.

(Source: CDC https://www.cdc.gov/ringworm/treatment/index.html)

Ticks and Tickborne Disease

Western black-legged ticks can transmit Borrelia burgdorferi, the bacteria that causes Lyme disease. It can also transmit the pathogen that causes anaplasmosis. These ticks are mainly found in Western Washington as well as along the eastern slopes of the Cascade Mountains.

- In the United States, ticks can spread bacteria, viruses, and parasites (pathogens) that cause human diseases.
- Many tickborne diseases can have similar signs and symptoms.

- Ticks transmit pathogens that cause disease through the process of feeding.

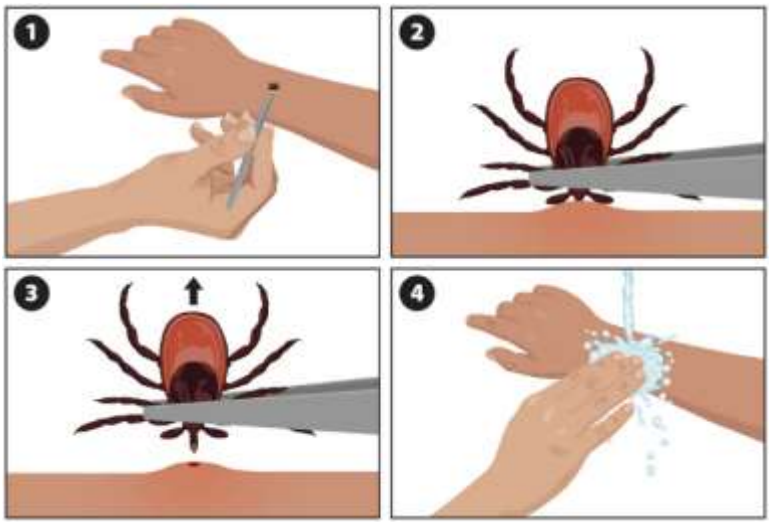
Many tickborne diseases can have similar signs and symptoms. The most common symptoms of tick-related illnesses include:

- Fever/chills. All tickborne diseases can cause fever.
- Aches and pains. Tickborne diseases can cause headache, fatigue, and muscle aches. People with Lyme disease may also have joint pain.
- Rash. Lyme disease, Southern tick-associated rash illness (STARI), Rocky Mountain spotted fever (RMSF), ehrlichiosis, and tularemia can cause distinctive rashes.

Ticks find their hosts by detecting animals´ breath and body odors, or by sensing body heat, moisture, and vibrations.

Ticks can't fly or jump, but many tick species wait in a position known as "questing". While questing, ticks hold onto leaves and grass by their third and fourth pair of legs. They hold the first pair of legs outstretched, waiting to climb on to the host. When a host brushes the spot where a tick is waiting, it quickly climbs aboard. Some ticks will attach quickly and others will wander, looking for places like the ear, or other areas where the skin is thinner.

How to Remove a Tick

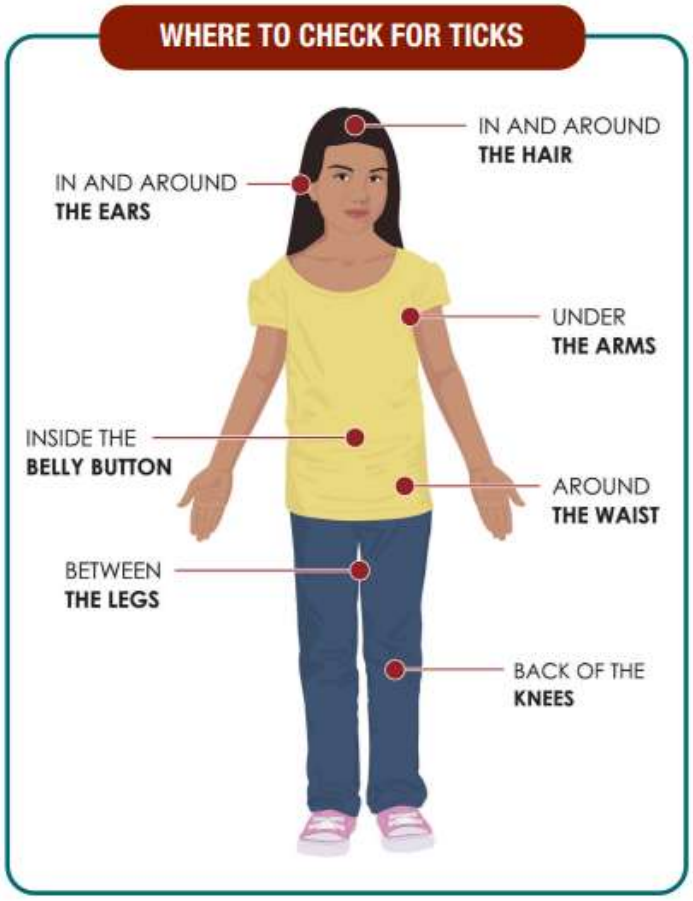


Use clean, fine-tipped tweezers to grasp the tick as close to the skin's surface as possible.

Pull upward with steady, even pressure. Don't twist or jerk the tick; this can cause the mouth-parts to break off and remain in the skin. If this happens, remove the mouth-parts with tweezers. If you cannot remove the mouth easily with tweezers, leave it alone and let the skin heal.

After removing the tick, thoroughly clean the bite area and your hands with rubbing alcohol or soap and water.

Never crush a tick with your fingers. Dispose of a live tick by putting it in alcohol, placing it in a sealed bag/container, wrapping it tightly in tape, or flushing it down the toilet. (Source: https://www.cdc.gov/ticks/)


WHERE TO CHECK FOR TICKS
IN AND AROUND THE HAIR
IN AND AROUND THE EARS
UNDER THE ARMS
INSIDE THE BELLY BUTTON
AROUND THE WAIST
BETWEEN THE LEGS
BACK OF THE KNEES

Rats & Mice

If you see evidence of rodents, set traps throughout your home to catch any rodents that may be inside. Continue trapping until there are no more rodents. If no rodents are captured for a week and there are no new signs of rodents, the rats are gone.

If new droppings (poop), urine spots, or gnawing persist after one week, you may be dealing with a rat infestation. Rats tend to fear anything new. Pre-bait traps (bait the traps without setting them) to help rats feel more comfortable with new objects. They will also learn that traps are a non-dangerous food source. Once you notice the bait is being eaten, you can set the traps.

Traditional snap traps are recommended to reduce rodent populations around the home. Choose the right kind of snap trap for the rodents in your home; there are different traps for mice and rats.

Carefully read the instructions on the box before setting the trap. Place a small amount of bait (chunky peanut butter or mutton fat works best) on the bait pan of the snap trap. Place the trap on the floor against the wall. Put the baited end of the trap next to the wall so it forms a "T" with the wall. Rodents prefer to run next to walls or other objects for safety.

Do not use glue traps and live traps. These traps can scare the rodents, causing them to urinate, which can increase your chance of getting sick.

Place traps in areas where you have seen mice or rats, nesting materials, urine and droppings, nibbled food, or gnaw marks. Place traps in closed areas, such as behind the stove and refrigerator, and in the back of cabinets and drawers. Put traps near other areas where you think

rodents are coming into your home, such as attics, basements, crawlspaces, and other areas without regular human traffic. Also place traps in outbuildings and in areas that might likely serve as rodent shelters.

Check traps daily and immediately dispose of any dead rodents. Some rodents, particularly rats, are very cautious and several days may pass before they approach the traps. Pre-baiting traps to get rats used to the new traps in their environment can help. Other rodents, such as house mice and deer mice, are less cautious and may be trapped more quickly. Reset traps until rodent activity has stopped.

Check the bait every week and re-fill or move it as needed for at least 15 days. Leave the baited traps out longer if you still have mice and rats.

(Source: https://www.cdc.gov/healthy-pets/rodent-control/trap-up.html)

How to Clean Up After Rodents

Spray urine and droppings with bleach solution or an EPA-registered disinfectant until very wet. Let it soak for 5 minutes or according to instructions on the disinfectant label. Use paper towels to wipe up the urine or droppings and cleaning product.

Rodent droppings, urine, and saliva can spread by breathing in air or eating food that is contaminated with rodent waste. Diseases are mainly spread to people from rodents when they breathe in contaminated air. Don't vacuum or sweep rodent urine, droppings, or nesting materials. This can cause tiny droplets containing viruses to get into the air.

(Source CDC: https://www.cdc.gov/healthy-pets/rodent-control/clean-up.html)

NUCLEAR WEAPON

What is a nuclear weapon?

A nuclear weapon is a device that uses a nuclear reaction to create an explosion. This explosion is much more powerful than that of conventional explosives (like TNT). When a nuclear weapon explodes, it gives off four types of energy: a blast wave, intense light, heat, and radiation. Nuclear weapons can be in the form of bombs or missiles.

When a nuclear weapon explodes, a large fireball is created. Everything inside of this fireball vaporizes and is carried upward. This creates a mushroom-shaped cloud. The material in the cloud cools into dust-like particles and drops back to the earth as **fallout**. Fallout can be carried by the wind and can end up miles from the site of the explosion. Fallout is radioactive and can contaminate anything it lands on.

What are the main dangers of a nuclear weapon?

A nuclear weapon would cause great destruction, death, and injury and have a wide area of impact. People close to the blast site could experience:

- Injury or death (from the blast wave)
- Moderate to severe burns (from heat and fires)
- Blindness (from the intense light)
- Radiation sickness, also known as acute radiation syndrome or ARS (caused by the radiation released)

People farther away from the blast, but in the path of fallout, could experience health effects from:

- Fallout on the outside of the body or clothes (external contamination) or on the inside of the body (internal contamination)
- Radiation sickness
- Contaminated food and water sources

What should I do to protect myself?

CDC U.S. Department of Health and Human Services Centers for Disease Control and Prevention

http://emergency.cdc.gov/radiation

NUCLEAR POWER PLANT ACCIDENTS

Nuclear power plants have safety and security procedures in place and are closely monitored by the Nuclear Regulatory Commission (NRC). An accident at a nuclear power plant could release dangerous levels of radiation over an area (sometimes called a plume).

What are the main dangers of nuclear power plant accidents?

Radioactive materials in the plume from the nuclear power plant can settle and contaminate people who are outdoors, buildings, food, water, and livestock.

Radioactive materials can also get inside the body if people breathe it in, or eat or drink something that is contaminated.

People living close to the nuclear power plant who are exposed to radiation could experience long-term health effects such as cancer.

What should I do to protect myself during a nuclear power plant accident?

If you live near a nuclear power plant, you can get emergency information materials from the power company that operates your local nuclear power plant or your local emergency services office.

CDC

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

http://emergency.cdc.gov/radiation

DIRTY BOMB OR RADIOLOGICAL DISPERSAL DEVICE

What is a dirty bomb?

A dirty bomb is a mix of explosives, such as dynamite, and radioactive powder or pellets. It is also known as a radiological dispersal device (RDD).

A dirty bomb cannot create an atomic blast.

When the bomb explodes, the blast carries radioactive material into the surrounding area.

What are the dangers from a dirty bomb?

The main danger from a dirty bomb comes from the explosion, not the radiation. The explosion can cause serious injuries and property damage. People nearby could be injured by pieces of radioactive material from the bomb. Only people who are very close to the blast site would be exposed to enough radiation to cause immediate serious illness. However, the radioactive dust and smoke can spread farther away and could be dangerous to health if people breathe in the dust, eat contaminated food, or drink contaminated water. People injured by radioactive pieces or contaminated with radioactive dust will need medical attention.

What should I do to protect myself?

CDC U.S. Department of Health and Human Services Centers for Disease Control and Prevention

http://emergency.cdc.gov/radiation

WHERE TO GO IN A RADIATION EMERGENCY

GET INSIDE

STAY INSIDE

STAY TUNED

If a radiation emergency happens in your area, you should get inside immediately.

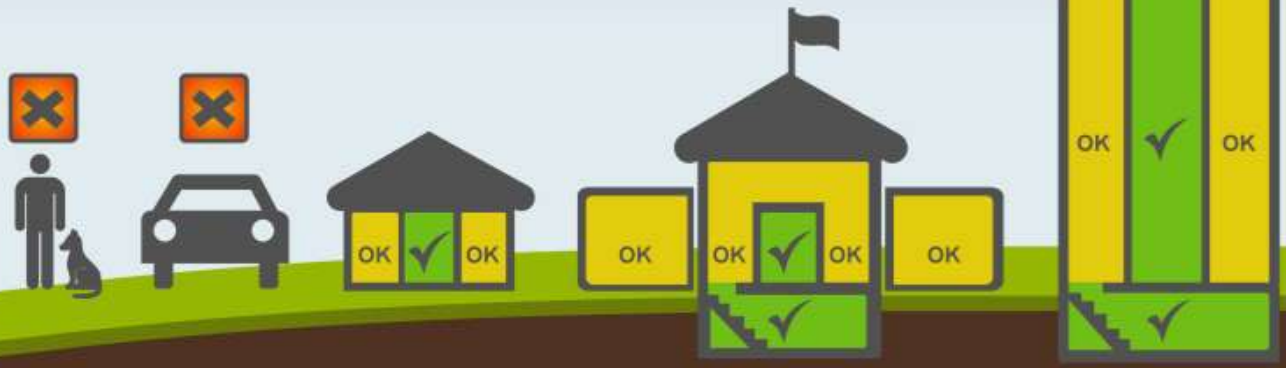
No matter where you are, the safest action to take is to: GET INSIDE. STAY INSIDE. STAY TUNED.

- Close and lock all windows and doors.
- Go to the basement or the middle of the building. Radioactive material settles on the outside of buildings; so the best thing to do is stay as far away from the walls and roof of the building as you can.
- If possible, turn off fans, air conditioners, and forced-air heating units that bring air in from the outside. Close fireplace dampers.
- Bring pets inside.
- Stay tuned for updated instructions from emergency response officials.

NOT SAFE

OK SAFER

SAFEST

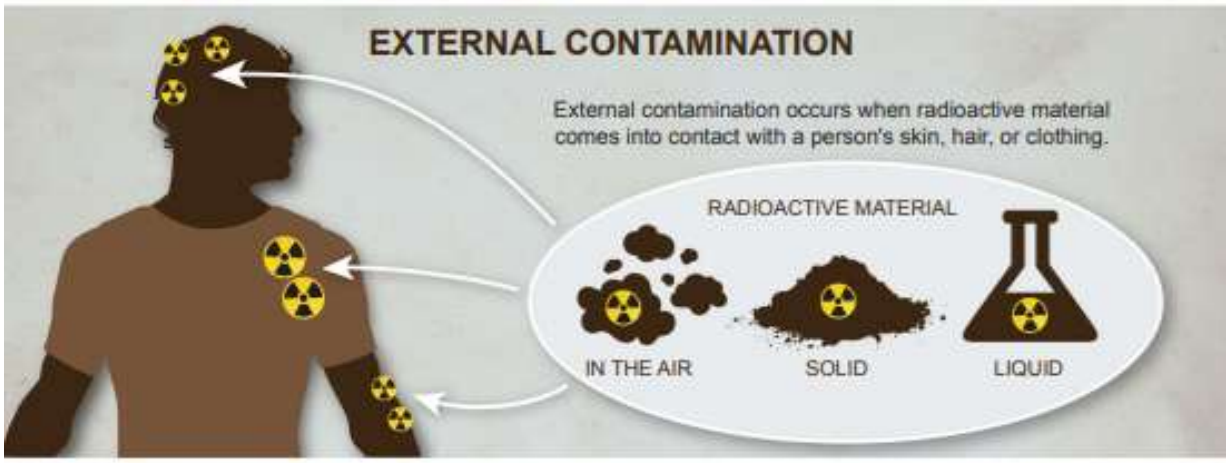


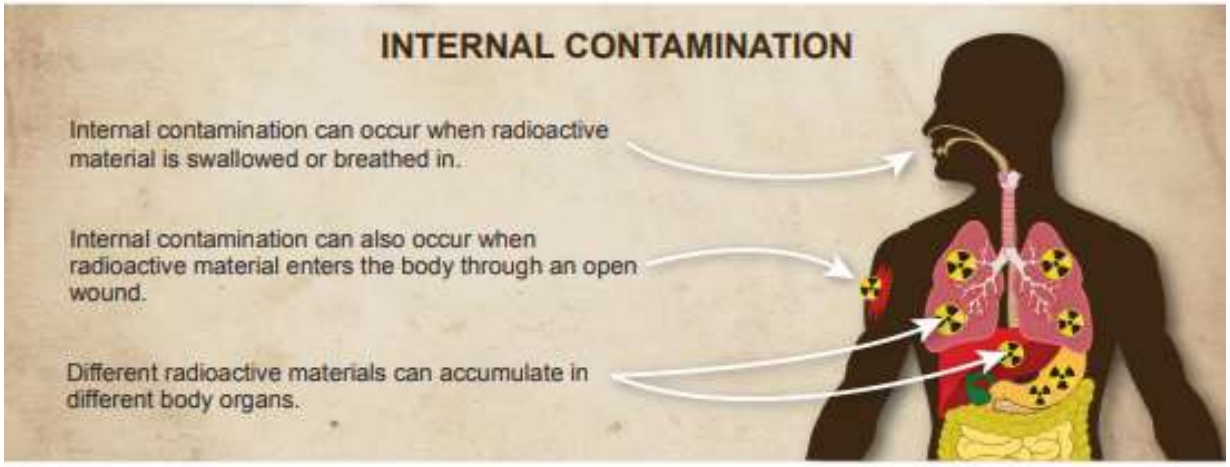
Adapted from Ventura County Public Health, Ventura County, CA

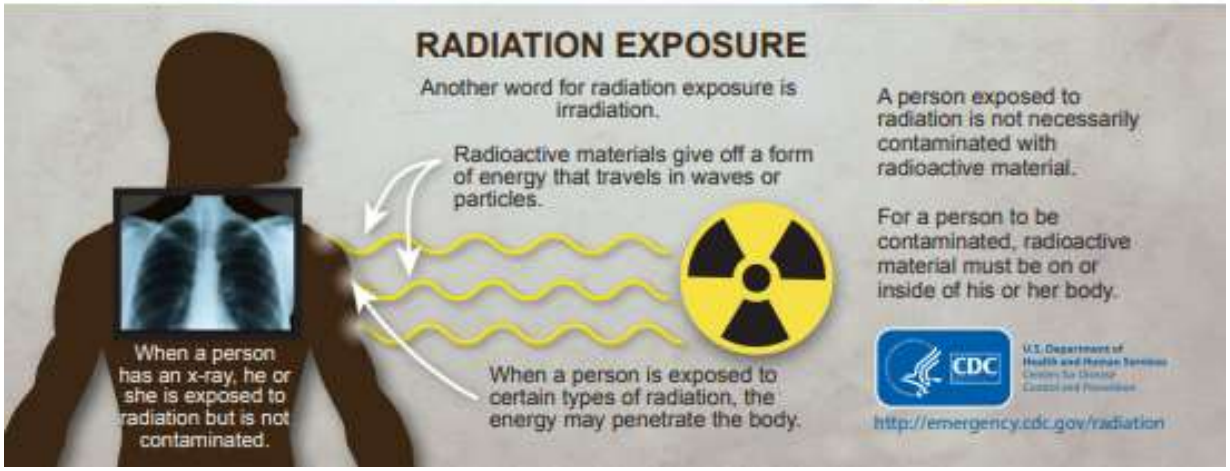
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

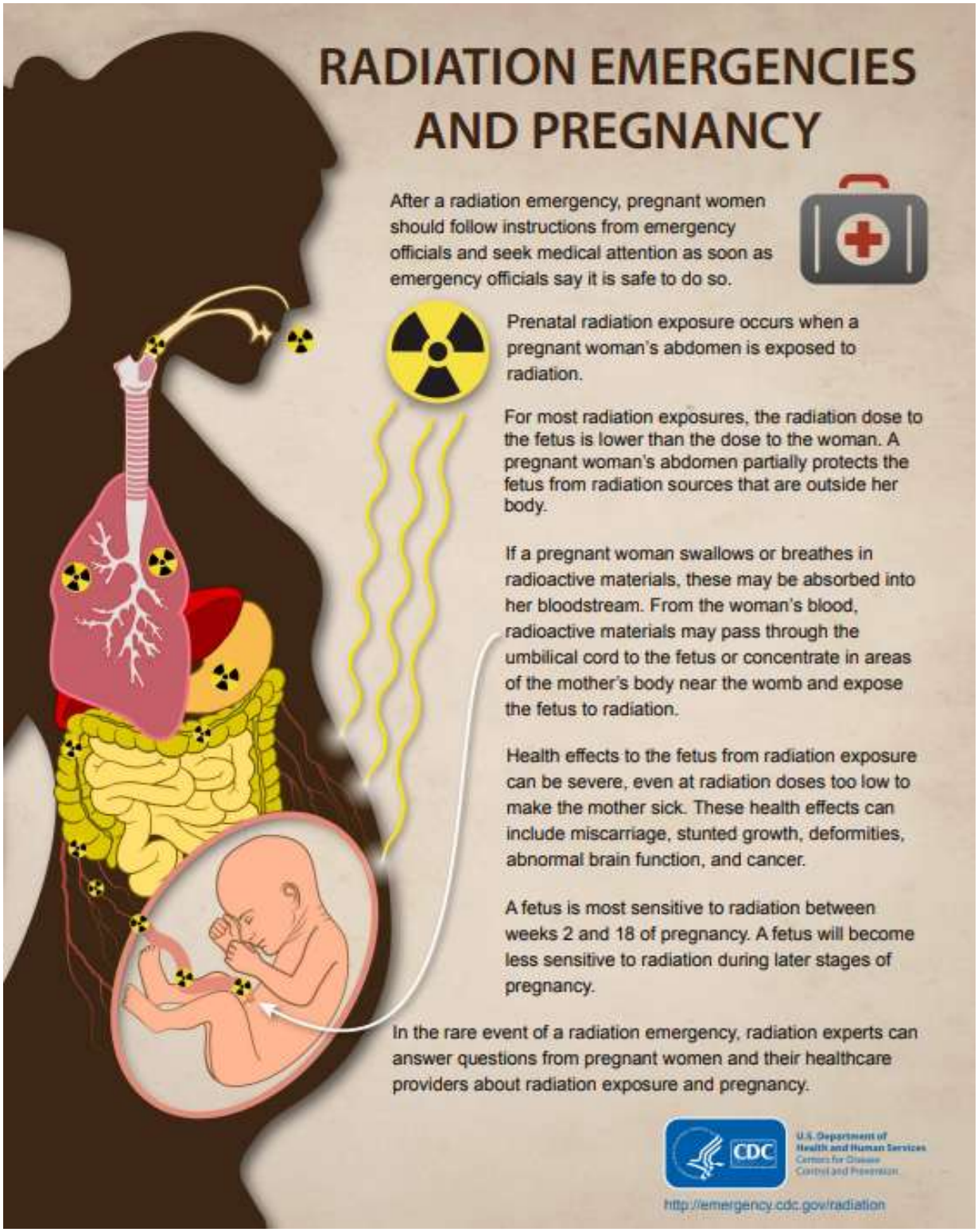
http://emergency.cdc.gov/radiation

RADIATION CONTAMINATION VERSUS EXPOSURE


EXTERNAL CONTAMINATION
External contamination occurs when radioactive material comes into contact with a person's skin, hair, or clothing.
RADIOACTIVE MATERIAL
IN THE AIR
SOLID
LIQUID


INTERNAL CONTAMINATION
Internal contamination can occur when radioactive material is swallowed or breathed in.
Internal contamination can also occur when radioactive material enters the body through an open wound.
Different radioactive materials can accumulate in different body organs.


RADIATION EXPOSURE
Another word for radiation exposure is irradiation.
Radioactive materials give off a form of energy that travels in waves or particles.
When a person has an x-ray, he or she is exposed to radiation but is not contaminated.
When a person is exposed to certain types of radiation, the energy may penetrate the body.
A person exposed to radiation is not necessarily contaminated with radioactive material.
For a person to be contaminated, radioactive material must be on or inside of his or her body.
CDC
http://emergency.cdc.gov/radiation


RADIATION EMERGENCIES AND PREGNANCY
After a radiation emergency, pregnant women should follow instructions from emergency officials and seek medical attention as soon as emergency officials say it is safe to do so.
Prenatal radiation exposure occurs when a pregnant woman's abdomen is exposed to radiation.
For most radiation exposures, the radiation dose to the fetus is lower than the dose to the woman. A pregnant woman's abdomen partially protects the fetus from radiation sources that are outside her body.
If a pregnant woman swallows or breathes in radioactive materials, these may be absorbed into her bloodstream. From the woman's blood, radioactive materials may pass through the umbilical cord to the fetus or concentrate in areas of the mother's body near the womb and expose the fetus to radiation.
Health effects to the fetus from radiation exposure can be severe, even at radiation doses too low to make the mother sick. These health effects can include miscarriage, stunted growth, deformities, abnormal brain function, and cancer.
A fetus is most sensitive to radiation between weeks 2 and 18 of pregnancy. A fetus will become less sensitive to radiation during later stages of pregnancy.
In the rare event of a radiation emergency, radiation experts can answer questions from pregnant women and their healthcare providers about radiation exposure and pregnancy.
CDC
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
http://emergency.cdc.gov/radiation

DECONTAMINATION FOR YOURSELF AND OTHERS

① TAKE OFF OUTER LAYER OF CLOTHING

Taking off your outer layer of clothing can remove up to 90% of radioactive material.

Be very careful in removing your clothing to prevent radioactive dust from shaking loose.

Put the clothing in a plastic bag or other sealable container.

Put the bag in an out-of-the-way place, away from other people and pets.

② WASH YOURSELF OFF

If you can take a shower:

Use soap and shampoo. Do not use conditioner because it will cause radioactive material to stick to your hair.

Do not scald, scrub, or scratch your skin.

Keep cuts and scrapes covered when washing to keep from getting radioactive material in open wounds.

If you cannot take a shower:

Wash your hands, face, and parts of your body that were uncovered at a sink or faucet. Use soap and plenty of water.

If you cannot use a sink or faucet:

Use a moist wipe, clean wet cloth, or damp paper towel to wipe the parts of your body that were uncovered. Pay special attention to your hands and face.

Blow your nose and wipe your eyelids, eyelashes, and ears with a moist wipe, clean wet cloth, or damp paper towel.

③ PUT ON CLEAN CLOTHES

If you have clean clothes:

Clothes stored in a closet or drawer away from radioactive material are safe to wear.

If you do not have clean clothes:

Take off your outer layer of clothing, shake or brush off your clothes, and put your clothes back on.

Rewash your hands, face, and exposed skin at a sink or faucet.

④ HELP OTHERS AND PETS

Wear waterproof gloves and a dust mask if you can.

Keep cuts and scrapes covered when washing to keep radioactive material out of the wound.

Rewash your hands, face, and parts of your body that were uncovered at a sink or faucet.

CDC

STAY TUNED FOR UPDATED INFORMATION FROM PUBLIC HEALTH OFFICIALS.

http://emergency.cdc.gov/radiation

HOW POTASSIUM IODIDE (KI) WORKS

How does KI work?

The thyroid gland cannot tell the difference between non-radioactive and radioactive iodine. It will absorb both kinds.

KI works by keeping radioactive iodine out of the thyroid gland where it can cause damage. When a person takes KI, the thyroid absorbs the non-radioactive iodine in the medicine. Because KI contains so much non-radioactive iodine, the thyroid becomes "full" and cannot absorb any more iodine—either stable or radioactive—for the next 24 hours.

KI is a pill or liquid that can be used in radiation emergencies that involve radioactive iodine. KI contains non-radioactive iodine. Non-radioactive iodine helps prevent radioactive iodine from being absorbed by the thyroid gland.

KI does not keep radioactive iodine from entering the body and cannot reverse the health effects caused by radioactive iodine once the thyroid gland is damaged.

Do not use table salt or food as a substitute for KI. Table salt and foods rich in iodine do not contain enough iodine to block radioactive iodine from getting into your thyroid gland. Too much table salt can be harmful.

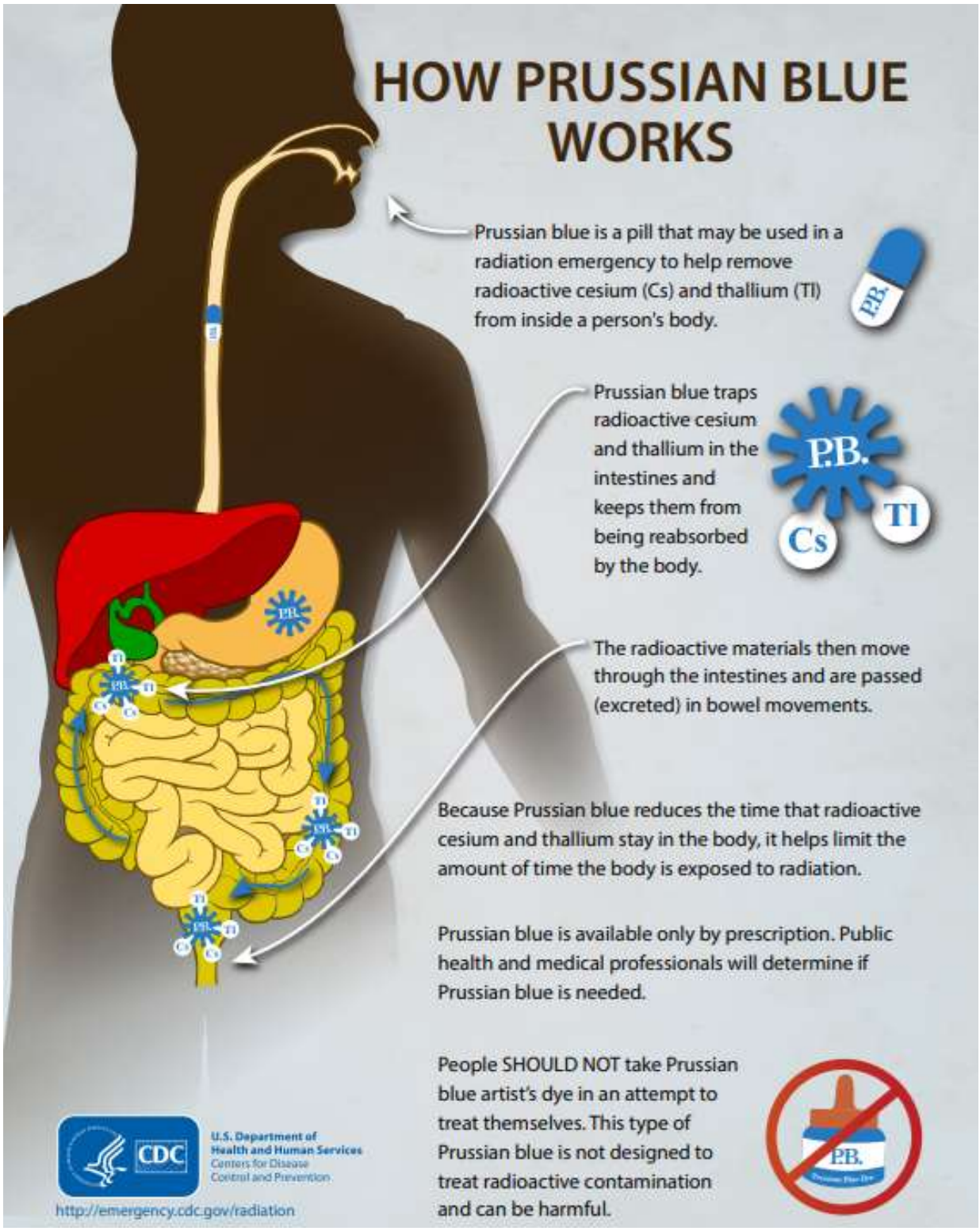
Do not use dietary supplements that contain iodine in place of KI. Only use KI products that have been approved by the Food and Drug Administration (FDA).

Only take KI on the advice of a medical doctor, public health, or emergency management officials. Taking too much KI or taking KI when it is not recommended can have serious health risks.

For more information about KI dosage and side effects visit http://emergency.cdc.gov/radiation

CDC

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention


HOW PRUSSIAN BLUE WORKS
Prussian blue is a pill that may be used in a radiation emergency to help remove radioactive cesium (Cs) and thallium (Tl) from inside a person's body.
P.B.
Prussian blue traps radioactive cesium and thallium in the intestines and keeps them from being reabsorbed by the body.
P.B.
Cs
Tl
The radioactive materials then move through the intestines and are passed (excreted) in bowel movements.
Because Prussian blue reduces the time that radioactive cesium and thallium stay in the body, it helps limit the amount of time the body is exposed to radiation.
Prussian blue is available only by prescription. Public health and medical professionals will determine if Prussian blue is needed.
People SHOULD NOT take Prussian blue artist's dye in an attempt to treat themselves. This type of Prussian blue is not designed to treat radioactive contamination and can be harmful.
CDC
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
http://emergency.cdc.gov/radiation

Communications (Telemedicine)

ADVISOR (Advanced Virtual Support for Operational Forces) is the military medical advisor line accessible via 1-833-ADVSRLN (1-833-238-7756) or DSN 312-429-9089. This 24/7/365 service provides forward-deployed medical personnel with immediate, on-demand phone access to specialty medical experts across 13 fields—including emergency care, critical care, infectious diseases, and toxicology—regardless of location or infrastructure limitations.

ADVISOR is intended for use by deployed US military healthcare providers who are working in contingency settings outside of established Military Treatment Facilities (MTFs). If you are not a US military healthcare provider, ADVISOR may not be an option for you, but you should still attempt to obtain access to some type of telemedicine resource to support your operations in the field.

A Telemedical Consultation Guide can be downloaded from the Prolonged Field Care website (https://prolongedfieldcare.org/telemed-resources-for-us-mil/).

The Military Health System (MHS) Nurse Advice Line (https://tricare.mil/nal) (800-TRICARE (874-2273), option 1) is available 24/7 by phone, web chat, and video chat for military service personnel enrolled in TRICARE.

The Veterans Health Administration Nurse Advice Line (https://www.va.gov/health/connect-to-va-care/) operates 24/7, 365 days a year allowing veterans registered with the VA to speak to a nurse and meet virtually with a medical provider (including emergency care health care providers). The national toll-free number is 1-800-698-2411 (1-800-MyVA411).

Many private health insurance programs offer access to a free nurse advice line and telemedicine. If you have health insurance, find out what your specific nurse advice line number and telemedicine portal is.

Affordable telemedicine without insurance is available through platforms like GoodRx Care, Teladoc, MDLive, Amwell, Amazon Clinic, and community health centers, with visit costs ranging from $25 to $100. You can obtain a prescription online by consulting a licensed healthcare professional through a telemedicine platform, which allows for virtual evaluation and prescription delivery to your chosen pharmacy.

With services like **Starlink** (https://starlink.com/) Internet access and access to telemedicine can be obtained from almost anywhere in the world. Video chats are the most common form of telehealth, but there are several other ways to use telehealth with patients and rural providers. Without Internet access it is still possible to have a limited telemedicine program by using **Winlink Global Radio Email** (https://winlink.org/) or other high frequency (HF) radio services. Even a simple voice telephone call or text messaging to discuss a patient's condition with a physician or other medical specialist can be invaluable in guerrilla medicine.

Whenever deploying to or working in a remote area, teams should establish access to telemedicine services. Telemedicine services significantly improve healthcare access for remote and isolated communities by overcoming geographical barriers. These services enable virtual consultations with specialists, reducing the need for long-distance travel and allowing timely diagnoses and treatment, especially for chronic conditions and high-risk pregnancies. (https://www.ruralhealthinfo.org/)

Recommended resources for learning how to set up communications networks for guerrilla medicine include:

- **AmRRON** (https://amrron.com/)
- **Brushbeater / NC Scout** (https://brushbeater.org/)
- **Off-Grid Ham Radio OH8STN** (https://oh8stn.org/)
- **S2 Underground Ghost Net** (https://github.com/s2underground/)
- **The Tech Prepper** (https://www.thetechprepper.com/)

NOAA Weather Radio "All Hazards" Broadcasts

NWR broadcasts National Weather Service (NWS) warnings, watches, forecasts and other non-weather related hazard information 24 hours a day. Channels WX1-WX7 are used in the US & Canada; channels WX8-WX9 are used for Canada Marine Weather broadcasts in some areas. These channels should be programmed as wideband FM (16K0F3E) receive only. Some radio manufacturers number the US weather channels in the order they came into use, others number them in frequency order. For programming in land-mobile radios, frequency order is recommended.

Weather Radio Broadcasts – Receive Only (WX1-WX7 US & Canada; WX8-WX9 Canada Marine Weather)						
WX1	WX2	WX3	WX4	WX5	WX6	WX7
162.400	162.425	162.450	162.475	162.500	162.525	162.550

Marine 21B	Marine 83B
WX8	WX9
161.650	161.775

NOAA Weather Radio (NWR), also known as NOAA Weather Radio All Hazards, is a nationwide network of radio stations in the United States that broadcasts continuous weather information directly from the nearest National Weather Service (NWS) office. It provides 24/7 updates on weather forecasts, warnings, watches, and other hazard information, including severe storms, hurricanes, flash floods, tornadoes, wildfires, and non-weather emergencies like AMBER alerts, chemical spills, and civil emergencies.

NATO phonetic alphabet, codes & signals

The ability to communicate and make yourself understood can make a difference in life-threatening situations – imagine for example that you are trying to alert a search and rescue helicopter of the position of a downed pilot. To ensure clear communication, NATO uses a number of well-known formats which are in general use. NATO standardization agreements enable forces from many nations to communicate in a way that is understood by all.

Some standards can be found in everyday civilian and military life. "Bravo Zulu", typically signalled with naval flags on ships at sea and meaning "well done", is also commonly used in written communication by the military, for example by replying "BZ" to an email.

Phonetic alphabet

The NATO alphabet became effective in 1956 and, a few years later, turned into the established universal phonetic alphabet for all military, civilian and amateur radio communications.

International Morse Code

Morse code transmits text through on-off tones, light flashes or clicks. It was widely used in the 1990s for early radio communication, before it was possible to transmit voice.

Flaghoist communication

Ships use flags as signals to send out messages to each other. The use of flags, known as flaghoist communication, is a fast and accurate way to send information in daylight.

Semaphore

Semaphore is a system in which a person sends information at a distance using hand-held flags – depending on the position of the flags, the message will vary. The signaller holds the flag in different positions that represent letters or numbers.

Panel signalling

Panels are visual signals for sending simple messages to an aircraft. Using a limited code, ground forces can send messages to pilots, for example to request medical supplies.

Numbers

Medical Advisor for Resistance Support (MARS) - GPT

In the face of rising global instability, authoritarian resurgence, and hybrid warfare threats, resistance movements and irregular warfare practitioners face profound challenges—not only in confronting oppression, but in doing so while sustaining their people, preserving legitimacy, and withstanding long-term attrition. One of the most fragile elements in any resistance effort is medical support—and it is often the most targeted by hostile regimes.

To help address this critical gap, we've developed the "Medical Support to Irregular Warfare" GPT—a customized AI advisor built specifically to support practitioners of irregular warfare, civil resistance organizers, medical planners, and defense policymakers operating in contested, denied, or occupied environments.

This GPT is not a general-purpose chatbot. It is an integrated analytical and advisory tool trained and guided to deliver medical, operational, and strategic insights grounded in the realities of irregular warfare. It synthesizes best practices from:

- U.S. Army Special Operations Command's ARIS publications
- NATO and allied doctrine on comprehensive defense

- Historical and contemporary case studies from occupied Europe, Ukraine, Southeast Asia, and more
- Modern doctrine on Tactical Combat Casualty Care (TCCC) and Prolonged Casualty Care (PCC)
- Resistance medical support concepts such as guerrilla hospitals, auxiliary networks, and denied-area logistics

This GPT is not for clinical diagnosis or peacetime medical advice. It exists solely to serve communities preparing for or engaged in resistance and irregular warfare in complex, high-threat environments. Learn more about the Medical Advisor for Resistance Support (MARS) here (https://prolongedfieldcare.org/2025/11/23/introducing-mars-the-medical-advisor-for-resistance-support-gpt-a-strategic-enabler-for-medical-resistance-resilience-and-readiness/)

This GPT is purpose-built for:

- Resistance organizers designing clandestine or auxiliary medical networks
- Special Operations medical planners advising partner nations or resistance forces
- Civil defense coordinators in at-risk countries developing comprehensive defense plans
- Medical educators building grassroots resilience and prolonged care training
- Think tanks and NGOs supporting irregular warfare policy and humanitarian frameworks

Log-In and use the **ChatGPT - Medical Support to Irregular Warfare** here:

(https://chatgpt.com/g/g-67efc0a793908191a03a6bc86c0e584f-medical-support-to-irregular-warfare)

Emergency Medical Treatment and Labor Act (EMTALA)

The Emergency Medical Treatment and Labor Act (EMTALA) is a federal law enacted in 1986 as part of the Consolidated Omnibus Budget Reconciliation Act (COBRA). It mandates that any hospital participating in Medicare must provide a medical screening examination (MSE) to anyone who comes to its emergency department requesting care, regardless of insurance status, ability to pay, citizenship, or legal status.

If the screening reveals an emergency medical condition (EMC)—defined as acute symptoms that could jeopardize health, cause serious impairment, or result in serious dysfunction—the hospital must provide stabilizing treatment until the condition is resolved or stabilized. This obligation applies even if the patient cannot pay.

If the hospital lacks the capability to stabilize the patient, it must arrange an appropriate transfer to another facility equipped to handle the condition. Hospitals with specialized capabilities cannot refuse such transfers.

While EMTALA does not apply to US military hospitals, federal law, 10 USC Section 1074 & 1076, states that dependent family members and military retirees must be granted access to military installations to receive any medical care to which they are entitled.

In the United States, individuals with an emergency medical condition that cannot be handled with guerrilla medicine, may choose to seek treatment at a hospital emergency department. While federal law requires that hospitals provide emergency medical care to anyone in need, it is not an option for routine healthcare. In remote and isolated areas, a hospital emergency department may not be available, and in a hostile or non-permissive environment presenting to a hospital emergency department may compromise individuals to police and government forces.

Capture Avoidance, Security, and Fieldcraft

When providing medical care in unconventional, resource-limited, high-risk, or austere environments you may find yourself the target of hostile forces. While this book is not intended to provide detailed instruction on combat tactics or operations in a high-threat environment, we believe that it is important for all personnel to have a capture avoidance plan and be skilled in basic fieldcraft and survival techniques.

To this end, we have included basic guidance from the US Army on avoiding capture by hostile forces, and tactical lessons learned from the US Navy SEALS. In addition, the following on-line courses are available to anyone wanting to increase their general security awareness.

The United Nations has security awareness training (BESAFE Course) (https://training.dss.un.org/) available on-line for all personnel, including staff, interns and consultants. BSAFE is also highly recommended for dependents. In addition, the UN offers a Preparing and Responding to Active Shooter Incidents course to enhance the safety of their personnel.

The US Federal Emergency Management Agency (FEMA) (https://emilms.fema.gov/training/active-shooter_targeted-violence-and-mass-casualty-events/) offers Active Shooter, Targeted Violence and Mass Casualty Events training online, available to the general public.

The US Military Services Joint Staff offers a 2-hour on-line course (https://jko.jten.mil/courses/AT-level1/launch.html) Level I Antiterrorism Awareness Training that is mandatory annual training for all US DOD personnel.

The US Defense Counterintelligence and Security Agency (https://securityawareness.dcsa.mil/) website provides access frequently assigned security awareness courses, including mandatory annual training for DOD and other U.S. Government and defense industry personnel.

Guerrilla medicine faces unique security challenges due to its use unconventional, resource-limited, high-risk, or austere environments—often outside formal healthcare systems, supporting social movements and advocacy work. Here are some key security practices to consider:

- Secure Communication: Use encrypted messaging apps like Signal to protect your communications.
- Digital Footprint: Minimize your online presence by deleting personal data and using privacy-focused platforms.
- Emergency Support: Establish an emergency support network and have an extra phone for field work.
- Digital Security Checklists: Follow checklists for digital security tailored for human rights defenders in high-threat areas, including those for travel and protests.
- Threat Modeling: Conduct a risk level assessment to determine the level of security needed for your specific activities.

Additional resources can be obtained from groups like

- Amnesty International (https://securitylab.amnesty.org/)
- Civil Liberties Defense Center (https://cldc.org/digital-security/)
- Commons Social Change Library (https://commonslibrary.org/)
- Electronic Frontier Foundation (https://www.eff.org/)
- Freedom of the Press Foundation (https://freedom.press/)
- Frontline Defenders (https://www.frontlinedefenders.org/)
- Holistic Security (https://holistic-security.tacticaltech.org/)
- RiseUp (https://riseup.net/)

Naval Special Warfare SEAL Tactics
NWP 3-05.2 Appendix F - Tactical Lessons Learned (June 2007)

F.1 PATROL LEADER

1 Lead the way you want to be led.

2. No individual or platoon can practice or train too much or too often.

3. Teamwork is the key to success and will only come through constant training and rehearsal.

4. While on a mission, attempt to minimize fatigue. Fresh men go further.

5. Show confidence in your decision making, and your platoon will be more likely to have confidence in you.

6. Don't be afraid to take advice from your platoon members, encourage it.

7. Don't lose your temper; it will affect your judgement. Keep cool.

8. Always have an alternate plan. Think ahead.

9. Fight aggressively, but think intelligently.

10. Inject realism into all phases of training.

11. Conduct at least half of your training at night.

12. Implement a good physical training program and your platoon will have fewer health problems.

13. Develop and use a pre-mission and post-mission checklist to ensure nothing is neglected.

14. Don't set patterns in your operations.

15. Never do the obvious.

16. Stay alert at all times when on patrol. You are never 100 percent safe until you are back at the base.

17. Don't arbitrarily make all tactical lessons learned your platoon SOPs. Always consider METT-T.

18. Don't forget to factor in the effect of cold body temperatures on platoon members' energy levels; keep personnel warm with the correct protective clothing.

19. Danger areas are not one-dimensional. They are 360 degrees and may have terrain features and trees/vegetation to hide the enemy.

20. If involved in unintended enemy contact, use fire superiority to make the enemy believe they have stumbled upon something "bad".

21. Use the KISS standard. Go back to basics and do them right. Any time you split the patrol, you have increased the potential for compromise and problems.

22. Be aggressive, bold, and creative when planning.

23. Do thorough, detailed mission planning.

24. Intelligence is perishable and often incorrect. Never trust intelligence 100 percent.

25. Be aware of possible "set-ups" when agents are involved.

26. Plan for contingencies.

27. Don't underestimate the enemy.

28. Understand the construction of structures you attack. Bullet penetration of flimsy structures may require changing the fire support location to prevent self-inflicted injury.

29. Know which direction doors and windows open: right, left, up, or down.

30. Prepare psychological leaflets, if deemed appropriate.

31. Ensure OPSEC is paramount in all aspects of operational planning.

F.2 MEDICAL

1. Take and use insect repellent. If mites or other insects become a problem, try to find appropriate repellent. Mud can be used as a last resort. Carry repellant in zip-lock bags and isolate it from other items in your rucksack. Squeeze air from the container and screw the cap on firmly.

2. Carry tweezers to remove anything that sticks. In areas with large thorns (e.g., Panama) carry needle nose pliers.

3. Devise or obtain a field litter and practice carrying wounded personnel during training. Even light personnel become very heavy when being carried in a litter. Practice carrying for at least 2 km.

4. Become knowledgeable on the how, why, and ways for MEDEVAC.

5. Ensure the personal medical kit is in a standard location and has standard contents for all platoon personnel.

6. Carry throat lozenges to stop coughing on patrol/ambush. (Be careful of odors caused by some lozenges.)

7. Use a wounded individual's medical field dressing before using your own.

8. Take care of your feet. If a platoon member starts to get foot problems while on a mission, stop in a secure position, remove boots, dry and treat the feet with powder and medicated ointment. Tape and proceed as able.

9. Narcotic painkillers, antibiotics, and anti-diuretics should be taken on patrol and carried in non-collapsible waterproof containers (key float containers available at marine stores work well).

F.3 DIET

1. Drink large amounts of water to hydrate before going on a mission and ensure enough water is taken and drunk throughout the mission. Stay ahead of water needs.

2. Carry water purification tablets and use them.

3. Do NOT smoke or use other tobacco products before or during operations, as it ruins night vision and has a distinctive odor.

4. Use vitamin supplements only if advised to do so by medical officer or HM. Most SEALs have a sufficient vitamin supply stored up in their bodies already.

5. Adjust to type of rations used; don't eat them for the first time on an operation.

6. If concerned with smelling "American", eat local area foods at least 72 hours before a mission; this allows both the sweat and the system to adjust from regular diet.

F.4 SURVIVAL

1. Carry survival gear as first line equipment. Include a mirror, aircraft panel, compass, flares, penlight, E&E kit, map of area, water purification, diarrhea medication, two power bars, or one cut-down food ration.

2. Ensure a sharp, compact knife is readily available.

3. Prior to deployment, learn and become familiar with the types of plants and animal existing in AO. These are possible survival foods.

4. Do not neglect to take food. It is unrealistic to expect to hunt or fish successfully.

F.5 UNIFORM

1. Wear a floppy hat to break up the outline of the head. A headband or bandanna by its self is ineffective for camouflage; however, a bandanna provides good neck protection and has other uses.

2. An "Australian net" is effective when worn around the neck as a utility item. An alternative to this is an OD towel.

3. Wearing gloves with padded palms and fingers cut off at mid-finger is effective for protecting hands from hot barrels and thorny plants. Full finger gloves are another option, especially for the AW man.

4. To maximize hearing, don't cover ears.

5. Ensure any non-standard clothing has grommet holes to allow for water drainage.

6. Do not wear different types of uniforms than expected by U.S. or allied forces (e.g., tiger stripes when everyone else is wearing jungle cammies). This may cause friendly forces to confuse you with the enemy.

7. Tie trouser blousing strings to boot laces or wrap cloth around top of boot (e.g., carrying handles from Claymore mine bag) to keep legs free of leeches.

8. The "blue and gold" tee shirt is not a good substitute for the OD T-shirt.

9. Any diving watch with a fluorescent face must be covered to prevent the glow from being seen in the dark. Sweatbands or a cut-up sock will work

well for covering watches. Beware of Velcro covers; they are noisy. Fluorescent watch faces can be used to assist SEALs following each other in very dark conditions, if other identification is not in use.

10. Suspenders for the trousers are very handy; they can be pre-made or improvised. In desert ops these allow clothing to be worn more loosely, which will assist with cooling.

11. Full-length trousers and shirts are a must to keep insect bites to a minimum.

12. Break in a set of boots and then set them aside for operations.

13. Wear good boots with laces. Running shoes have a tendency to pull off in the mud. Going barefoot can be hazardous to you and your platoon.

14. Enemy trackers can be successfully confused as to the size of the patrol if the entire SEAL platoon has the same sole pattern on their boots.

15. "Velcro" closures make too much noise. Zippers are another item to avoid. Buttons are much quieter than Velcro or zippers. Pull-the-dot fasteners work well but require lubrication if used in and around salt water.

16. Two-piece camouflage uniforms are better than those modified to one piece (jumpsuit fashion).

17. Green socks that blend with equipment are better than white ones, as you can tie them to your pack to let them dry out. State-of-the-art dark backpacking/athletic socks are very effective. Wool or polypropylene is better than cotton, which absorbs too much water.

18. Don't sew luminous glint tape to floppy hats or uniforms, unless required for a specific mission.

19. Tuck your jacket into your pants. You can't use the lower pockets because of your LBE but you can temporarily stuff expended magazines inside your shirt during contact.

20. Tie down all survival equipment to the uniform or LBE to prevent loss if pockets should tear.

F.6 WEAPONS

1. Carry spare bolt groups for the M60; know how to change it out rapidly. The M60 is not a good 20-pound club.

2. Ensure buoyancy is correct by dip testing personnel with all of their equipment on; adjust buoyancy as weight changes. Use LIVE AMMUNITION, or correct for live ammo weight.

3. Carry linked ammo in a carrying case (e.g., canteen case or other improvised case) to keep it from getting out of line. Ensure the case has a grommet to drain water.

4. Bring at least one weapons cleaning kit per patrol.

5. When modifying the issued sling, improvise but be aware nylon can melt on a hot barrel. Slings can be used as "ropes" to secure splints and as tourniquets. Ensure that tape on the weapon does not hinder its operation in any way.

6. Change the round in the chamber after a night in the field.

7. Clean and lube all magazines and rounds daily and when returning from operations; never assume they are clean enough.

8. Using something to separate 30-round magazines, such as a small piece of wood, and then taping them together allows a quick magazine changeover. The magazines should be in the same directions with enough space to allow them both to seat properly.

9. Don't fire the M4 on fully automatic, unless you are the PT responding to an immediate ambush.

10. Fire your weapon shooting low, particularly at night. Ricochets will kill too, and most people will hit the ground when the shooting starts.

11. M203 GNs must practice and fully understand arming distances, types of 40mm rounds, and shooting in the open or in confined vegetation.

12. Always carry the weapon with the selector switch on SAFE.

13. Use a plastic muzzle cap or tape to keep water and dirt out of the barrel.

14. Place magazines upside down in their pouches, primers inboard, to keep out dirt.

15. Do not retrieve your first expended magazine during contact; it will consume valuable time.

16. The mission will dictate proper weapons mix.

17. Shotguns and 9mm sub-machine guns are not as effective in a jungle environment as the M60 and M14 or

M4. Ensure personnel are cross-trained in all weapons.

18. Point all weapons in a safe direction while on board the insertion vehicle:

a. Upward in a boat

b. Downward or outboard in a helicopter

c. Outward or upward in a vehicle.

19. In the desert, each individual should carry cleaning equipment for his own weapon on every patrol, regardless of the length, type or nature of mission. Cleaning must be strictly controlled and staggered so that at least 75 percent of the weapons in the patrol are ready for use at any time. Check with the PL before cleaning a weapon. Use non-oil base lubricants, such as graphite to prohibit accumulations of dust and grit in the weapon. You must have your weapon with you at all times. Whenever possible, keep two hands on it. When sleeping or relaxing, keep it within arm's length.

20. Test fire all weapons prior to departing a friendly area on patrol to ensure proper functioning. The tests should be done under similar situations that will be encountered on the patrol.

21. The variety of weapons should be limited to make ammunition redistribution easier and assures familiarity with each other's weapons. Also, identification of your own personnel from the enemy by the weapon sounds is made more possible.

F.7 ORDNANCE AND DEMOLITIONS

1. A Claymore mine with a 30 or 60-second fuse attached is a handy, quick ambush or "get away" technique. The Claymore mine can be one of the most useful weapons; learn all there is to know about them. Attaching a CS grenade to the Claymore is also very effective.

2. When employing Claymores, use two men. One places the mine and the other stands guard.

3. Never place the Claymore where you cannot observe it. Consider cutting the firing wire in half when operating in dense vegetation. You won't use more than 50 feet of wire. This makes emplacement and recovery easier and cuts weight.

4. Place the Claymore so the blast parallels your personnel and the firing wire does not lead straight to your position.

5. Bring two cap crimpers per patrol when using demolitions.

6. Ensure no shiny rounds of linked ammo are worn outside the uniform, as this will destroy camouflage effectiveness.

7. Ensure hand-thrown grenades are thrown clear of vegetation, so they do not bounce back and explode near the thrower or his platoon mates.

8. Make continuous daily checks on all grenades when on patrol to ensure the primers are not coming unscrewed.

9. Don't bend the pins on the grenades flat. The rings are too hard to pull when needed.

10. Paper tape through the rings of grenades and tape the ring to the body of the grenade. The paper tape will tear for fast use, while plastic or cloth tape will not. This also keeps the ring open for your finger, stops noise, and prevents snagging.

11. Fragmentation grenades are good for inflicting casualties.

12. CS grenades are ideal for stopping or slowing down enemy troops and dogs pursuing you and are effective in damp and wet weather, whereas CS powder will dissipate.

13. WP grenades have a great psychological effect against enemy troops and can be used for the same purpose as CS grenades. The use of both CS and WP at the same time will more than double the effectiveness of each.

14. Thermite grenades will destroy either friendly or enemy equipment. Recommend one per patrol.

15. Violet and red are the smoke colors most visible from the air, but in dense vegetation or wet weather use white HC smoke to signal aircraft. Notify the aircraft prior to signaling with WP, as they may mistake it for a marking rocket indicating an enemy position and attack you.

16. The AT-4 is very effective against mud bunkers.

F.8 LOAD BEARING EQUIPMENT/RUCKSACK

1. Be sure all snaps and buckles are taped. Don't use paper tape.

2. Wear your LBE buckled when not sleeping. If you're wounded, your teammates can drag you by your LBE shoulder straps.

3. Use a waterproof bag to protect equipment. Ensure at least one man carries an extra plastic bag; it weighs very little and can be used for many things.

4. Test the shoulder straps on the rucksack before packing it for patrol. Always carry 550 cord to repair straps.

5. Sew a Claymore bag onto the top flap of your rucksack to carry Claymores, binoculars, a camera, or handset.

F.9 COMMUNICATIONS

1. Communications is the responsibility of everyone in the patrol, not just the RTO.

2. Pre-set frequencies so a quick turn of the dials will put you on the desired frequency. This is especially helpful at night when trying to avoid using light.

3. Perform pre-mission radio checks with the radio and crypto device (e.g., KY-57) hooked up and packed in the rucksack, just the way it would be in the field. Test the radio after the crypto device has been loaded, with and without the crypto device hooked up, with the NSWTG/TU and various support elements.

4. Always use fresh batteries in all communications gear. Carry spare batteries, but do not remove the plastic wrapping prior to using them.

5. Claymore firing wire can be used as a field expedient antenna for HF communications.

6. When using intra-squad radios (e.g., Saber) use a headset on both ears with the center cut out of the non-functioning earpiece. Use a push-to-talk microphone instead of a sound activated one. Put the push-to-talk button on the right side of "H" gear for a right-handed shooter so it can be operated with the left hand.

7. Always remain calm and professional, no matter what happens.

8. Signals to be used on patrol should be prearranged and understood by all patrol members. They should be based on standard hand and arm signals and kept simple.

9. Always keep talk to a minimum. Use the standard hand and arm signals whenever practical.

10. While patrolling, pass simple instead of complex instructions. Allow time for the word to be passed before executing.

11. When giving the PLO, visual aids are of great value. Examples include a sand table, chalkboard, or a sketch with a stick, on cleared ground.

12. Consider the use of emergency recall signals, such as an aircraft circling a certain feature for five minutes at a set time. This eliminates the need for coming up on a radio frequency, which is a potentially compromising evolution.

13. Pass word when on patrol. Ensure the platoon knows what is happening.

14. Whenever identifying your position to support elements with smoke or flares, always have support elements authenticate to make certain that the enemy is not using deception.

15. Whisper into the handset while in the field. Exhale first, then speak, or your transmission will sound like a tire leaking air.

16. The operational base must avoid making unnecessary, unscheduled radio checks just because they haven't heard from a team.

17. Repeat grid coordinates sent to you to ensure accurate copy.

18. Do not send "same" or "no change" when reporting team location. Always send your coordinates.

19. Constantly check your CEOI to ensure your authentication tables are folded open to the page showing the most current set. This will prevent dangerous delays when an aircraft requests authentication.

20. Waterproof your CEOI and authentication tables by laminating them with acetate or putting them in a plastic zip-lock bag.

21. Clean all contacts daily with the eraser end of a pencil.

F.10 SPECIAL EQUIPMENT

1. A good pair of garden branch cutting shears can be used to cut vegetation.

2. NVEO can be very helpful; however, ensure someone not wearing NVEO accompanies the NVEO user. This is especially true if the SEAL wearing the NVEO is patrolling as a point element.

3. When in an observation position, scan with NVEO every five minutes or so. If you scan continuously, you increase the chance of being spotted. Two persons using NVEO in the passive mode looking directly at each other will see glowing "cat eyes."

4. NVEO and thermal viewers complement each other and should be used in combination; for example, the PT could use the M845 riflescope and the PL could use a thermal imaging rifle sight.

5. Carry the Litton 911 in a 5.56 mm magazine pouch or on a lanyard around your neck.

6. Noise suppressors ("silencing" devices for weapons) have application in night ambush, but they require well-understood SOPs.

7. A Swiss seat of tubular nylon, worn or taped to web gear, is a good addition to operational equipment.

8. Everyone should carry a 20-foot length of 550 cord.

9. Wear equipment above the waist to prevent it from chafing the legs, and for safety.

10. Carry a gas mask in a 2-quart canteen pouch when planning to use CS gas or if the threat of enemy gas is high.

F.11 OPERATIONAL TECHNIQUES

F.11.1 Insertion

1. Use OPSEC by never using the same routes and using false inserts and extracts.

2. Ensure multiple AOs have been cleared with blanket times to allow OPSEC flexibility.

3. Use false insertions and extractions.

F.11.2 Extraction

1. Do not set patterns.

2. Use correct landing signals to assist helo pilots when landing.

3. Ensure all signals are pre-briefed and understood.

F.11.3 Navigation

1. Use compass heading and pace count. Trust the compass, but be aware of areas with magnetic anomalies.

2. Use a pre-measured line (e.g., 550 cord; 10-25 meters) to work critical navigation situations.

3. Learn to use the stars for navigation. While doing so, confirm your location periodically with a compass.

4. Every SEAL should know the methods of finding the North Star and know how to use the sun's shadow to determine the direction of north.

5. Do not mark any of your field maps/charts with friendly information; you can, however mark them with enemy information.

6. Preset your compasses prior to departure on patrol if personnel are not proficient at setting the compass in the dark.

7. When planning a patrol route, remember to use offsets whenever applicable. An offset is planned magnetic deviation to the right or left of the straight-line azimuth to an objective. It is used to verify your exact location relative to the objective.

8. Use the PT as a point, not as a compass man. He is primarily concerned with the security of the patrol. Have the second or third man responsible for navigation.

9. In an LUP note the direction on the compass of how you are lying so that if you need to move off quickly, you will be somewhat oriented where you are in relation to the camp and patrol intentions.

F.11.4 Patrolling

1. Know personnel limits. Take time of day, weight, terrain type, thickness of vegetation, swamps and so forth into consideration when planning distance to be covered. Underestimate distance and overestimate time.

2. Memorize routes.

3. Develop SOPs that include stealth.

4. Listen for animal noises, or the lack of them, as indications of possible enemy activity. Know how local animals react, e.g., monkeys scream initially, then quiet down.

5. Watch for small, domesticated animal fences around buildings.

6. Do not uncover luminescent watch dials (or compass dials) to follow platoon members at night.

7. Pack out any item you pack in; minimize amount carried.

8. Don't allow tobacco in the field.

9. Go as quietly as you can as long as you can. Don't make noise, don't make contact, don't go hot until in place and ready to attack. Exception: if compromised, go immediately into VIOLENT ACTION.

10. Whether on a planned assault or an IAD, use extreme and overwhelming violence of action. The initial 10-15 seconds of engagement should be so violent that those who are not killed immediately will be in a state of shock. The subsequent selective fire clean-up will take care of the shock victims.

11. Apply vigorous ACCURACY at all times. Don't just put holes in every leaf without drawing blood.

12. Don't try to do battle with a superior force in a firefight. Lay down a solid base of sustained suppressive fire (15-30 seconds maximum). If still receiving significant return fire, break contact. Once contact is broken stop shooting immediately; it only continues to give away your position.

13. Eliminate pocket litter; check all pockets prior to departing. Wear only taped dog tags.

14. Carry maps and notebooks in waterproof containers; use wetnotes or waterproof paper.

15. Use pencils, not pens, to make notes on patrol. Ink smears when it gets wet.

16. Never take pictures of platoon members while on patrol. Valuable intelligence can be gained if photos are lost or captured.

17. Reapply camouflage at least three times per day or as needed; absolutely necessary at an ambush or raid site and after crossing a beach.

18. Each patrol member should keep a list of his own lessons learned for after-action reports and personal use.

19. Use deception techniques on patrol to deceive the enemy and/or catch him in a hasty ambush. The following techniques can be useful:

a. Double back (See Figure F-1).

b. Leave a false trail.

c. Execute a false extraction.

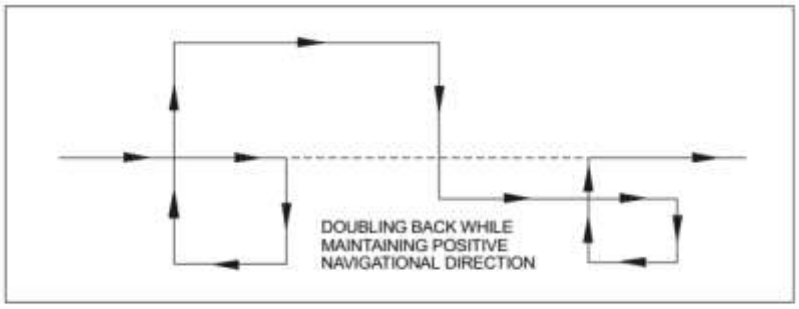


Figure F-1. Doubling Back

20. On desert patrols, take turns carrying the heavy equipment so as not to unduly wear out any one patrol member.

21. It is best to patrol on nights that are dark, rainy, and windy.

22. When conducting a recon of an enemy position, maintain a covering force within supporting distance of the recon element.

23. Whenever breaking the patrol at night in terrain that is difficult for control, break the patrol in place. Each man faces in the direction of responsibility, and kneels.

24. While moving at night, take advantage of ambient noise such as wind, vehicles, planes, shelling, battle sound, and sounds of insects.

25. Whenever possible, allow all patrol members sufficient time for their eyes to adjust to darkness. It takes over 30 minutes before your eyes fully adjust.

26. When using any light on night patrol or when passing through a lighted area, close one eye to prevent total loss of night vision and warn other patrol members whenever light is to be used.

27. When infiltrating enemy lines, an alternate rendezvous point should be selected in the event the first point is occupied by the enemy.

28. When a patrol is moving in a file, each man follows the man's footsteps in front to minimize detection of footprints and knowledge of how many personnel there are in the patrol if they are detected. This is particularly important in the desert.

30. In mountainous terrain, plan to use the upper part of the ridges for movement if the situation permits but do not get on the skyline. This allows for good visibility downward and the chance to evade over the other side of the ridge if required.

31. On small patrols RS should automatically send the count forward after each extended break or passage of any obstacle.

32. Whenever stopping, establish an "all around defense". Obey this rule for short breaks, long breaks, in the LUP, when setting up an ambush - in fact, at all times.

33. Depending on the mission tasked, the aim is often to avoid contact with the enemy. SEALs operate in small numbers and their job is often to reconnoiter or conduct clandestine attacks. Nevertheless, every patrol must be prepared for this eventuality and thoroughly understand and rehearse the procedures. Practice your break-contact drills.

34. When working with friendly agents such as partisans, never take along the entire patrol to make contact with them. Send only one man to make the contact and cover that one man.

35. If you see an enemy, freeze like an animal does and then slowly ease down out of sight. Sudden movements catch the eye and are giveaways to your position.

36. Be conscious of the natural habits, rhythms, and sounds of animals, birds and insects and learn to recognize them when they have been disturbed.

F.12 MISCELLANEOUS

1. Use unit SOPs for sterilizing equipment, team numbers, letters, or whatever. Avoid names and ranks on equipment.

2. As experience increases, the weight of carried equipment will decrease. More is not always better; "fight light" for greatest effectiveness.

3. Learn a few key language phrases of the enemy tongue, so in an unexpected meeting with an enemy or local, they will hesitate a second or two.

4. Take two or more ponchos in any element; they can be used as litters, for construction of rafts, concealing lights, and shelters.

F.13 TRAINING

1. Practice, day and night; emphasize night training.

2. Rehearse for missions.

3. Acclimatize personnel before missions.

4. Learn about enemy cultures, superstitions, and habits to get the "feel" for planning operations.

5. Ensure all equipment and any personal additions are sound proofed by testing them. Wrap items with tape or pad them to prevent noise. This is especially true of magazines.

6. Practice getting under low obstacles and over higher obstacles, remembering not to catch parts of rucksack and other equipment on the obstacle or on overhanging vegetation.

F.14 SPECIAL OPERATIONS MISSION CRITERIA

1. Is this an appropriate SOF mission?

2. Does it support the CINC's campaign plan?

3. Is it operationally feasible?

4. Are required resources available to execute?

5. Does expected outcome justify the risk?

Tactical Pocket Reference

Capture Avoidance/Personnel Recovery Plan

A Guide For Coalition Forces
January 2007

Asymmetric Warfare Group
2282 Morrison St.
Ft. Meade, MD 20755-5355

Capture Avoidance:

The Basics

- Maintain an offensive mindset and situational awareness (SA)
- Expect the enemy to be crafty and resourceful
- Maintain internal communications
  - voice / radio
  - line of sight
  - signals / code words
- Use the 5-point contingency plan (GOTWA)
- Identify rally points
- Use buddy teams
- Conduct surveillance detection
- Brief a lost soldier plan
- Use cross cover in static positions
- Coordinate with QRF and adjacent units, especially when operating along unit boundaries

Signal Kit Checklist

(mission-dependent)

Day

- ❑ Signal mirror
- ❑ Whistle
- ❑ Smoke
- ❑ VS-17 panel / US flag

Night

- ❑ Strobe
- ❑ Chem-lights
- ❑ Pyrotechnics
- ❑ Glint tape
- ❑ Laser (visible / IR)

Other

- ❑ Personal Locator Beacon (activate if capture is imminent)
- ❑ GPS
- ❑ Survival kit
- ❑ GSM phone

Unit Considerations for Threat Reduction

- Use ISOPREP cards (DD-1833)
- Conduct basic SERE training
- Read and assess intelligence reports
- Include lost soldier plan and personnel recovery into OPORDs
- Rehearse escalation of force scenarios
- Understand capabilities and availability of enablers:
  - –THT / HET
  - –UAVs
  - –JSTARS
  - –CA / PSYOPs
  - –SIGINT
  - –Joint Personnel Recovery Cell
  - –Special search dogs
  - –LN forces leaders

5-point Contingency Plan

Leaders issue this to any team or element that is operating apart from the main body.

- Going Where? (destination and route)
- Others going with you?
- Time you will be gone? (No Later Than...)
- What if you don't return on time?
- Actions on enemy contact (your element's actions and mine)

Rally Points

- Easy to recognize
- No recent indications of enemy activity
- Located away from population concentrations and traffic
- Defendable
- Cover and concealment
- Multiple routes in / out
- Dominant terrain

➢ Consider using friendly locations or easily identifiable local features as rally points. Plan and brief code words, radio frequencies, call signs, and running passwords in OPORD paragraph #5.

Counter-Surveillance Tips

Be alert for:

- Same person or vehicle seen repeatedly
- Anyone filming your activities or seen taking notes or drawing
- Cell phone or radio use
- Trailing persons / vehicles
- Static surveillance (i.e. observer in a parked car for extended period)
- Check points
- Vehicles on the BOLO (be on the lookout) list
- Change in population / traffic patterns
- Suspicious behavior / individuals appear "out of place"

➢ Communicate threats and indicators to your unit, i.e. "BOLO vehicle trailing the patrol at this time."

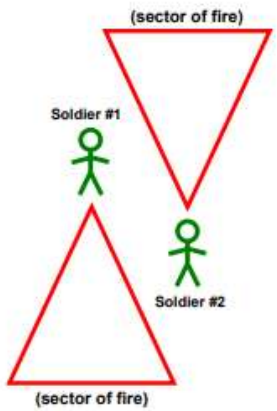
Counter-Surveillance Tips

Employ:

- Random security patrols and observation posts
- Radio checks with outposts
- Irregular guard force transition
- Emplacement of barriers, roadblocks, checkpoints
- Active searches and ID checks
- Special search dogs

➢ An aggressive enemy will test your security posture by conducting hoaxes or smuggling non-lethal contraband.

Cross Cover



Use buddy team positions. In a static position, soldiers maintain line of sight with each other and provide security for each other.

Maintain a Reactionary Gap! (21 ft Rule)

- A dismounted attacker can move 22 feet in 2 seconds (22 & 2).
- How close will you let a possible threat approach?
- What is your unit's escalation of force response, mounted and dismounted, day and night?
- Multiple threats will take more space and time to effectively engage.
- Avoid "tunnel vision," watch your flanks and rear. Establish 360 degree security and sectors of fire for your unit's position.
- Capture is more likely to occur during close quarters, urban fighting.
- Continue to fight until immobilized or incapacitated.

Considerations if Captured

Personify yourself:

- Use names
- Maintain self-respect / honor
- Be honest (loss of honor if caught lying)
- Talk with captors about family / personal life
- Try to identify the captor's patterns and vulnerabilities
- Don't threaten your captors
- Show respect to your captors
- Answer questions but don't divulge specific information that can jeopardize Coalition Forces, missions, or capabilities
- Be prepared for possible physical abuse and enemy exploitation for Information Operations (IO) purposes

NEVER GIVE UP!

Lost Soldier Plan

(Individual)

- A lost soldier is one who is isolated from his unit.
- If you are a lost soldier, immediately attempt to establish communication with your unit: move to higher ground to establish line of sight (LOS) if the situation allows. Attempt to move to the last location where you had positive contact with your unit. Listen or look for the pre-planned lost soldier signals. If you are unable to re-establish contact with your unit at the last known location, move to your last rally point. Seek cover and concealment.

Lost Soldier Plan

(Squad / Platoon)

- A unit has a lost soldier if the unit leader cannot locate an individual soldier by any means available.
- REPORT TO HIGHER HQ IMMEDIATELY! As time elapses, the size of the search area increases. Use a pre-planned lost soldier signal. Move to the last known location of the soldier. Establish the initial cordon. Search the immediate area. Request QRF and adjacent unit assistance as well as other enablers (UAVs, HUMINT teams, etc.)

Lost Soldier Plan (Example)

"If you are separated, move to the last location where you were last with the patrol. Take a covered and concealed position and wait at that location for 2 hours, if we do not appear, wait until darkness and move to the south of Route Smith 300 meters and move east through rally points 1-5 until you return to the patrol base. Remain at each RP for 15 minutes. We will immediately establish a cordon of the area where we identified you were missing and send a patrol to your last known location and conduct a search. The BN will push OPs to rally points 1-5 in an effort to have a safe haven for you to maneuver to. "

Squad and Platoon Lost Soldier Planning and Response

- Plan and disseminate the lost soldier plan
- Brief and follow the personnel recovery plan
- Immediately report to higher HQ and inform adjacent units
- Search the immediate area
- Establish the initial cordon
- Upon the arrival of QRF and enablers, assist them by describing the situation (5 W's) and orient them to quickly support the search

Resources

- ❑ FM 3-50.1 "Army Personnel Recovery"
- ❑ SH 21-76 "Ranger Handbook"
- ❑ Joint Personnel Recovery Center:
- ❑ JP 3-50 "Joint Doctrine for Personnel Recovery"
- ❑ Level B SERE:

WHERE DO I GO IF ISOLATED?
Hole-Up Site

Purpose

- Used when more time is required for rest; attend to medical issues; meet basic needs; signal
- Locate hole-up site once at Designated Area for Recovery (DAFR)

Provides

- Localized access to water and food
- Concealment—ground and air
- Listening and observation points
- Multiple avenues of escape
- Protection from environment
- Communication and signaling opportunities
- Safe distance from enemy positions and LOC
- Be wary of weather extremes in the area (i.e., flash floods in ravines and canyons)

While at site

- Establish contact in accordance with ISG or EPA
- Take precautions to ensure signaling devices do not compromise position
- Review plan of action; establish priorities
- Reassess situation
- Inventory equipment
- Determine specific location
- Improve camouflage

Move from hole-up site only if required because of enemy activity or to move to recovery site!

Search and Rescue Dot (SARDOT)

- Geographic reference point known only to friendly forces that allows IP to pass location over unsecured net; direction is given in magnetic azimuth and distance from the SARDOT

SARDOT example:
"I am 250° and 15 clicks from Joe (SARDOT)."

- SARDOTs provided with PR code words
- Units may designate obvious terrain features for points of reference and incorporate into EPA

Search and Rescue Numerical Encryption Grid (SARNEG)

- 10-letter code word that allows IP to pass numbers over unsecured net and pass coordinates without regard for directional indicators; standard operating procedures (SOP) will normally direct coordinate format and SARNEG encoding procedures
- **SARNEG example:**

SARNEG	C	O	M	B	A	T	H	E	L	P
Encode	0	1	2	3	4	5	6	7	8	9

- **MGRS** coordinates 19TDJ2630801125 encoded as "19TDJMHBCLCOOMT."
- **Latitude/longitude** coordinates 263023N 0112517E encoded as "MHBCMBCOOMTO."

JP 3-50 Personnel Recovery

Annex D To Appendix C

{Sample} EVASION PLAN OF ACTION

Legend: (if no annotation, presume it applies to all types of evaders)

FWA fixed-wing aircraft with chutes

GF ground forces

RWA rotary-wing aircraft (or fixed-wing without chutes)

Name:

Rank:

Service:

SSN:

Unit and Location (in pencil, if not electronic):

Date of this record:

PART I-PERSONAL ACTION PLAN–On file and common to every mission; change as situation dictates. It should contain basic TTP the individual plans on using if isolated on any mission.

Pre-mission personal preparation checklist

- Dress for the ground environment
- Dog tags, ID/Geneva Convention card
- Sanitize pockets and uniform - combat wallet
- Personal pocket survival/evasion items
- Issued items to support evasion
- Attached sketch or map - (YES) - (NO)

NOTE: The individual should create and memorize his/her own personal TTP. They may be pre-printed and standard for the individual, with same general plan for every mission. However, the equipment used may change with season or location.

I consider the following to be not essential to my evasion, and plan to conceal and/or leave the following:

• FWA–Harness, helmet, G-suit, personal flotation, canopy (less 6 cords and GREEN gores).

• GF–Rucksack, entrenching tool, mortar tube and base plate, extra M-60 ammo.

• RWA–M-60s and ammo (make inoperative) if not wounded and travel is possible, med kit if not in-use, flight helmet, 5-gallon water can.

I consider the following top priority items, in order, and plan to keep them if at all possible:

• FWA–Vest, hit and run kit, seat kit, beacon, 6 chute cords, 16P black raft (only if within 3 miles of the coast).

• GF–Weapon, water, ammo, web gear, camelback, radio, Gore-Tex jacket, PVS-7, VS 17 panels, 2 claymores.

• RWA–Vest, MP-5 w/4 mags, web gear, survival gear, rucksack, extra water jug.

I will carry the following personal survival/evasion kit items in my pockets on every mission:

• FWA–Mirror, multi-blade pocketknife, fishing kit, fire kit, 3-color lens flashlight, space blanket.

• GF–light emitting diode (LED) light (blue, green, and red lens), mirror, glint tape patch, 5-IR Fire Flies, laser pointer, Leatherman, 2 large leaf bags, 3 Ziploc bags, 50 iodine tabs, 2- 4x7 battle dressings, metal match, 20 ft 550-nylon cord, dental floss, needles, hooks.

• RWA–Sheath knife, reflector kit, glint tape, mirror, red laser pointer, 4 flashing IR LEDs, fire kit, 6 power bars, Ziploc bag, 50 iodine tabs, pen gun, 7 flares, 5 small (3x3) S- 17 signal panels.

EVASION ACTIONS

NOTE: The level of detail in the plan will be determined by the theater/unit guidance or directive, mission requirements, and, if no other planning guidance, the individual's own assessment of the need for detail, e.g.:

• In all cases, I will communicate upon starting evasion using "MAYDAY" (or applicable code word) call sign, and approximate location using search and rescue numerical encryption grid (SARNEG) for coordinates, or position and distance from SARDOT, or other encoded references in EPA, presuming it does not compromise security.

• COMM–OUT–Assume evasion has started if four communication windows are missed.

If not seriously injured:

INITIAL ACTIONS– (1ST 30-60 MIN - APPROXIMATELY) (FWA)

• If possible, steer aircraft or parachute away from action and to a location conducive to evasion and recovery.

• I plan initial movement from the landing site to the nearest feasible land form or vegetation and conceal equipment and myself.

• Understood - If the enemy is in very close proximity–no time to conceal equipment - I will move 15 minutes, away from my direction of flight, change direction 90 degrees; move approximately another 30 min and hide.

• I plan to hide by burrowing into the duff/forest litter, feet first, lay still, and stay put for three days–unless forced to move.

EVASION COMM-PLAN THROUGHOUT

• I will monitor my radio and key the mike as specifically indicated in the EPA or as briefed in the comm-plan.

• My duress word is ____ Duress action: At close approach, I will display one or more specific visual signals in a specific manner, as described in my EPA.

• At night, I will use standard IR devices as indicated here in my EPA, or unit guidance, at recognizable US aircraft sound.

• Authenticate IAW recovery asset direction, using personal information and number found in the ISOPREP. I will keep transmissions as brief as possible to avoid enemy direction finding (DF). If the transceiver is inoperative, I will utilize visual signals appropriately.

EXTENDED PLAN

• If no contact in 3 days, I will travel at times of low light or moonlit nights for 3 nights or over the first ridgeline/elevation and attempt radio contact one hour after sundown.

• Movement will be toward the landmark(s) referenced in Part II of my EPA. I will use the briefed ground-to-air signal, made from natural materials, after day seven and hide 1,000-1,500 yards away in the best concealment available.

INITIAL ACTIONS - (1ST 30-60 MIN - APPROXIMATELY) (GF)

• Fire last AT-4 or green smoke as signal to break contact and start evasion plan. Dump unnecessary gear quickly where they are.

• Use rally points to regroup, if necessary, IAW times in Part II.

• Will counter enemy pursuit efforts by applying counter-tracking techniques–radically changing direction–zigzag repeatedly, and employ anti-pursuit munitions/grenades and booby traps with remaining mortar rounds.

EVASION COMM-PLAN THROUGHOUT

• If radio is available, will report initial situation as soon as possible with word “SAWDUST.” If no positive contact, I will communicate “in-the-blind” IAW the unit communication plan. Will initially attempt contact on sight/sound of any friendly aircraft. Authenticate as briefly as possible IAW ISOPREP. Duress word "Rations.”

• Any signaling device that I may use will have appropriate specifics on exactly what the device is, when, where, how many, and how the individual device or technique will be used, will be recorded here in the EPA. I realize that details such as specific numbers, spacing, shapes, colors, orientation and pattern, and movement actions are important in the EPA for recognition by the rescue force.

EXTENDED PLAN

• Maneuver to a hide site after maximum of 2 hours movement.

• Lay still for 24-36 hours depending on periods of light and enemy activity.

• After initial 48 hours, will move in low light - at dusk, dawn to allow for finding food and water.

• If celestial light and terrain allow, movement in the middle of the night and sleep in the day time. Night vision device batteries will be saved for movement when enemy activity/population density requires night movement.

• Movement will be generally away from the mission line of travel, with regular “dog legs.”

• If forced to select my own improvised signal and recovery site other than stated elsewhere and have no radio, my personal emergency GTAS will be: “-X>” unless otherwise directed in theater plans - annotated in Part II of this EPA.

• I will hide 1-2 kilometers from the signal in the direction of the "dash" off of the side of the "-X>" or other directed (Day/Week/Monthly/Quarterly) signal shown in Part II.

• Any signaling device that I may use will have appropriate specifics on exactly what the device is, when, where, how many, and how the individual device or technique will be used, will be recorded here in the EPA. I realize that details such as specific numbers, spacing, shapes, colors, orientation and pattern, and movement actions are important in the EPA for recognition by the rescue force.

INITIAL ACTIONS– (1ST 30-60 MIN - APPROX) (RWA)

• Communicate upon realization of a problem.

• Put aircraft down placing one or more landforms (river, ridge, canyon) between crew and enemy as far from enemy action as possible. Available cover and concealment and results of the last communication drives actions.

• Remove useful gear as soon as possible. If enemy is in close proximity, remove all weapons, ammo, water, and medical kits into cover and concealment; assess situation. Prepare to defend in

place, only with immovable casualties and/or if recovery is imminent.

• If travel is desirable due to superior enemy activity, move as soon as possible to avoid contact with the enemy being initially drawn to the aircraft. Display a "V" of local materials at/near the crash site with the open end of the "V" indicating our initial general direction of travel. Move 2-4 hours and select concealed positions that are defendable. Consider waiting for low light to mask movement. Move in rough terrain or heavy vegetation, using areas of solid soil, to avoid leaving tracks. If no contact with the enemy, decide to stay put or move to a better position. If we move, it will be toward a locally developed, predetermined recover site

annotated in PART II. We will try to leave as little evidence of direction of travel as possible.

EVASION COMM-PLAN THROUGHOUT

• Radio and visual signals to any passing US aircraft. Will vector overhead if feasible, and use one small VS-17 signal panel and mirror to pin-point our location.

• If the radio is inoperative, we will display three small VS-17 signal panels in a straight north-south line 20 feet apart and will use mirror flashes to gain attention.

• Any signaling device that I may use will have appropriate specifics on exactly what the device is, when, where, how many, and how the individual device or technique will be used, will be recorded here in the EPA. I realize that details such as specific numbers, spacing, shapes, colors, orientation and pattern, and movement actions are important in the EPA for recognition by the rescue force.

• Duress word: "Dog" - Duress visual signal - triangle instead of straight lines, laser light up and down.

EXTENDED PLAN

• If recovery is not possible, move in low light until survival radio contact can be made or a ground-to-air signal and recovery site is found.

• Any signaling device that I may use will have appropriate specifics on exactly what the device is, when, where, how many, and how the individual device or technique will be used, will be recorded here in the EPA. I realize that details such as specific numbers, spacing, shapes, colors, orientation and pattern, and movement actions are important in the EPA for recognition by the rescue force.

INJURED/UNABLE TO MOVE:

• I will move the injured from immediate danger, conceal nearby if possible, avoiding and/or concealing tracks, with defense in place the only likely option. If injured, very sick, or incapacitated I will provide for specific signals listed here in my EPA to maximize recovery assets potential of locating my position. If unable to speak due to thirst or injury and recovery

asset is close, I will use a specific number and pattern of mike clicks, taps on the mike with a rock, or mirror flashes to prove life and assist in locating my position.

• **PART II–MISSION SPECIFIC PLAN** (Insert Hyper-link annotated map)

• Developed by: SFC Rock. H K

• Time and date: 1 MAR 2005

• Call sign: GLOCK-21

• Radio Frequency: 123.4 MHz

• Mission start date: TBD

• Planned completion date: 9 days from start +/- 8 hours

• Ranking Person on Mission: Capt. Marvel. I. B.

• Unit: PDA 700

• POC not on mission: Maj. Flagg

• Phone: DSN 555-1234

• Number in group: 12

• Attached list: Yes/No–Y

SARNEG: **T H U N D E R P I G**
0 1 2 3 4 5 6 7 8 9

• Duress word: SNAKE Word of Day: REDSKIN Letter: “L“

• Number: 14

• Unit authenticator: 7123

• Close proximity challenge: “APPLE”

• Response “JACK”–back-up: “WORM”

NOTE: Radioed location references will be distance and headings from lettered rally points in lieu of SARDOTs. Visual signal - No Radio - GTAS: “ X”–(dash, dash X) using your foot. Insert evasion plan specific to this particular mission; may be a modification of plans laid out in Part I.

ADD ANY CHANGES TO PART I - FILE PLAN (add sheets if necessary)

PART III–REQUIRED OTHER SOURCE DATA–Information that would be helpful to recovery forces - supplied by isolated personnel's unit to component PRCC or JPRC:

• Intelligence briefings received. Unit level, and any instructions that were provided. (Insert Hyperlink to intelligence briefing and SPINS)

Equipment list of issued survival/signaling items provided to the isolated personnel by unit level Aircrew Flight Equipment/ALCE/Para-Rigger—any and all mission specific briefings. (Insert Hyperlink of issued life support equipment list)

• Mission brief–mission operations instructions. Unit level operations, and other data. (Insert Hyperlink of pre-mission operational briefing as related to PR)

A Call to Action for America

A collaborative report by: Task Force on National and Homeland Security, Secure the Grid Coalition, and other partners

October 2017

Imagine the following:

Day 1, 3:00 p.m. EST (Noon PST): The power goes out across the entire continental United States. Transformers have blown out everywhere. Within minutes, all 61 commercially operating nuclear power plants across the Nation have "scrammed" (i.e. shutdown) their reactors, which is standard operating procedure during the loss of external electric power. Millions of TVs, laptops and computers have shorted out. Cell phones and landline phones aren't working. The Internet is down. Smoke is visible from a number of small fires across every community, but very few sirens from fire engines can be heard. Traffic lights are out, and a significant number of cars and trucks that were running are now inoperable and scattered about the roadways. Trains and subways are shutdown. ATMs don't work, banks close, and Wall Street closes. The Emergency Broadcasting Service and 911 are not operating. First responders are unable to communicate, coordinate or respond, not that they could get anywhere on the clogged roadways. Many of the planes that were in the air have crashed, and those that didn't must now attempt to land without help from air traffic control or ground radar. No one seems to know what's going on. By nightfall, most homes, hospitals, and elderly care facilities are without running water. The nighttime sky is pitch black across America, and the stars seem eerily bright overhead.

Days 2-3: There's a run on everything at the stores; those that are open will only accept cash or barter, since debit card readers are non-functioning. There will be no trucks coming to resupply the stores, since canning facilities, distribution centers, and interstate trucking all rely on the electric grid to function. There are long lines at the very few gas

stations that have emergency diesel generators powering their pumps. In homes without emergency back-up power, anything remaining in freezers spoils and becomes unsafe to eat.

Days 4-5: Law and order begin to break down. Without communications and functioning electronic equipment, most emergency responders will likely stay home to protect their own families. Stores are looted for anything and everything. Many in the cities begin to evacuate to the suburbs, often by foot, overwhelming the already limited resources there. Emergency back-up diesel generators in most homes run out of fuel.

Days 6-8: Emergency back-up diesel generators run out of fuel at most water and wastewater facilities, radio and TV stations, hospitals, food processing plants and emergency services locations, if they weren't damaged or destroyed on Day One. There will be no tanker trucks coming to refuel. Hospitals are required to evacuate their patients if they are without external electric power for more than 72 hours, except there aren't any hospitals with electric power to evacuate their patients to. By now, there are few doctors, nurses and hospital staff members remaining, because the majority have gone home to protect themselves and their families. Many patients requiring constant care either have died or will die soon. Without firefighters and water pressure, a number of fires that started from a variety of causes, including nature, human error, or arson, burn out of control until there is nothing left to burn. As a result, entire city blocks and many homes are now in ashes. Without water pressure, there is no clean, safe drinking water available. Without wastewater processing, the situation becomes disgusting and dangerous very quickly as pressurized, raw sewage pours from toilets and sinks in the lowest elevations of the system. This makes millions of homes and apartments uninhabitable due to both the health risks and high levels of methane gas.

Days 9-14: Without law enforcement, the hungry and desperate masses break into their neighbors' homes for food and supplies. Armed groups and gangs roam the streets, preying on the weak and defenseless.

Even "good people", if unprepared and forced to survive, do "whatever it takes" to feed their children and keep their loved ones alive. Like first responders, many in the stateside military and National Guard abandon their posts and rush home to protect their own families from the looters. Stateside military bases are 99% reliant on the civilian power grid and are just as "dark" as everywhere else. National Guard Armories around the Nation have been or will soon be looted by well-armed gangs intent on stealing loosely protected military vehicles and hardware. The thin layer of civilized society has begun to slip away in the fight for survival.

Days 14-30: By the end of Day 7, the Nuclear Regulatory Commission's (NRC) mandated diesel fuel supply for back-up emergency diesel generators at most nuclear power plants runs dry. For back-up generators and reactor cooling pumps damaged or destroyed on Day 1, there are two primary, central locations in the U.S. with spares that would need to be transported many miles on clogged highways to their destinations. If reactor plant operators are unable to operate and resupply fuel to back-up diesel generators, and if they are unable to power and operate reactor cooling pumps, reactor cores will eventually overheat and pools for spent fuel rods will eventually boil. If this is the case, over the next few days to weeks, many of the 61 commercially operating nuclear power plants with 99 nuclear reactors in 30 states (as of 5/30/17) will meltdown, just as the Fukushima nuclear power plant did in Japan following the tsunami of 2013. Based on 2010 Census data, more than 120 million Americans live within 50 miles of a nuclear power plant. Their already bad situation will become far worse as grainy, radioactive debris blows downwind from failed reactor plants. There is nowhere to evacuate to, no one to oversee or coordinate any evacuations, and few methods available to communicate the problem. Adding to the social breakdown, many of the 2.3 million adults in federal and state prisons and county jails across the U.S. escape due to lack of power, resources and manpower to contain them. The first outbreaks of dysentery, cholera and typhoid, all brought on by drinking unpurified water and living in unsanitary

conditions, begin to spread throughout the country. These and other treatable third world diseases, along with dehydration, starvation and murder, claim the lives of tens of millions of Americans. There are no hospitals to go to. There are no medications available. Even minor injuries and infections become life threatening. In most parts of the country, there is no one coming to help… and this is just the first 30 days following the grid being down.

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Pacific Northwest Field Operations Group

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